



FRIDAY, JUNE 5.

Contributions.

Interchange Prices of Wheels and Axles.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I think that the price list of wheels and axles as given in the rules governing the condition of and repairs to freight cars for interchange of traffic, going into effect Aug. 1, 1884, does not meet the requirements of the system of motive power accounts now in general use, and that it is deficient information as to matters brought up by the price list itself.

Net prices are given—that is, the price after deducting the value of the old from the value of the new material, leaving us without information as to what those two values are.

I know of some roads that keep an account with each class of material, and I believe the practice is general to keep a debit and credit side with each class of work ("Repairs of freight cars," for instance), charging the material inserted at its cost price, and crediting the material removed at its market value. Suppose that under the former method we wish to credit the wheel account with a pair of new wheels. The price list is of no service to us; in fact, it is rather a hindrance than a help, being somewhat of a puzzle. By mixing up together the price of wheels and axles and the labor in fitting them, the price of each is concealed, leaving us to find it out, each man for himself as best he can.

We have the price of wheels "on same axle," but not (as we should have) the price of wheels and axles separately.

Suppose, as is often the case, the same axle is not used: that a defective one is removed and a second-hand one inserted, or a second-hand one removed and a new one inserted, what shall the net amount of our bill be in such cases?

The price-list saith not; and yet, be it observed, it makes a distinction between defective or second-hand and new axles.

Again, the price of two 33-in. new wheels, less defective, is given at \$16, and the price of the same, less second-hand, at \$12. This would seem to place the value of second-hand wheels at \$4 per pair, or \$2 per wheel more than defective wheels; an amount presumably representing the additional wear to be obtained from the former. Lower down, we find second-hand wheels, less defective, rated at \$2 for either one wheel or two wheels. From the fact that two wheels are valued at the same as one wheel, I infer that the \$2 is intended to cover the labor at the wheel press, there being no allowance made for the additional work, as in the first case cited above.

Before leaving this part of the subject, let me ask what the net amount of a bill should be, when a pair of defective wheels and an axle are removed, and second-hand wheels and axle are inserted in their place? Who can answer this under the M. C. B. rules?

I think a price list is wanted which is more in harmony with the system of motive power accounts now in use—one that is simple in form yet comprehensive enough to embrace all the conditions recognized in the present rules.

I now offer a price list which seems to me to meet these requirements. If it does not, and some one else can do better, I shall be glad to hear from him.

I would have Rule No. 2 read:

The charge and credit price of wheels and axles shall be as follows:

33-in. wheels, new,	each	\$	—
33-in. " second-hand, "	"	"	—
33-in. " defective "	"	"	—
Axles, new,	"	"	—
" second-hand, "	"	"	—
" defective "	"	"	—

Add to the above, the following charges for turning, boring and pressing, which charges should not be considered in the case of credits:

Wheels, new,	each	\$	—
" second-hand, "	"	"	—
Axles, new,	"	"	—
" second-hand, "	"	"	—

To answer the question above proposed, with this price list, we have only to take the price of the second-hand wheels and second-hand axle, add the cost of turning, boring and pressing, and deduct the price of the defective wheels and axle.

I hope this will attract the notice of some one who has the same interest as the writer in the subject, and who can have proper attention called to it.

M. C. B.

Snow and Snow Plows.

TRUMANSBURG, N. Y., April 22, 1885.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Almost every subject pertaining to railroad practice receives proper notice and attention in the columns of the *Gazette* except the proper manner of keeping the track clear from snow in the winter time. As for that, we find but little that answers the purpose. In the "Elements of Railroad-ing" we have suggestions that are of value, but they apply to but few cases, and are in nowise general, and they but partly answer the purpose on the road with which the writer had been connected nearly a quarter of a century—a road troubled with snow only in occasional winters, but whose earnings have fallen off nearly a quarter of a million dollars in one winter under just the same method of removing snow as Mr. Paine recommends, viz., the employing of hundreds of men, to be found living on the line, who could handle a shovel.

Now, making use of any and all kinds of men in severe

weather to clear the track is rather a makeshift, but it can be done where the snow is say but a foot or so in depth, with room at the sides to cast it; but how is it with excavations drifted with snow 10 ft. deep and upward? Where can they throw it with the men buried to their waists in snow? Some efficient machine and not hand-power is needed.

Railroad people appear to be far behind the efficiency of other departments in handling snow. We will admit that hard and soft snow require different tools, but snow is about the same thing year after year, varying more in quantity than in quality, although very much harder west of the great lakes than elsewhere. In the East the snow that fills excavations will seldom support the weight of a man, but in the West the cold, fine, rolling snow, packed by the winds, will scarcely show the impression of a man's boot-heel. It may be that most roads have the proper tools for handling all kinds of snow, but if they have, how is it they were not brought out this last winter? I will venture the assertion there has been no material improvement, and but little change in the use or forms of snow plows since 1850, and if they were not satisfactory then, the same is the case now.

The writer having had some experience in plowing snow both in the East and West, asks why there has been no advance in this as in other departments. The answer perhaps is that the employees are not paid for thinking but for working; that the officials are too busy to think, and that the men who get up the plows seldom see them work; that snow lasts but a short time, and in some winters is no trouble at all; that a few hours' or days' snow blockade is of but little consequence any way, because the local business will not leave the line, even if it is delayed a short time, and that when all are doing their best, the patrons should be satisfied. But the truth is, all is unsatisfactory.

Some years ago the *Gazette* suggested in a plan for a snow plow that the mold-boards be constructed movable, to be varied to accommodate the shear line to the speed of the propelling power, but where is the snow to be disposed of in the deep cuts, and at what angle are the wings or mold-boards to be set when required to penetrate the deep snow? A pilot boarded over in a proper manner as high as the engine's frame is the best kind of a plow for snow under 20 in. deep, and one engine is sufficient; but with deep snow it is like cutting down trees with a jack-knife.

Let it be remembered that where a locomotive engine is buried in deep snow it is not a very powerful institution, for the want of a clear track, which it is not possible to have just then and there, so the object should be to keep the track free from snow that the engines can work, or to construct something not requiring a clear track.

H. & H.

Retrenchment Papers.

VII.—IN CONCLUSION.

We have now canvassed the chief items of the operating expense account. In our first paper we found the Master Mechanic and Master Car-Builders together chargeable with about 30 per cent. of the same, the Division Superintendent with 30 more, and the Roadmaster with about 19 per cent. additional, making in all 79 per cent. of the sum total. Of the remaining 21 per cent. there are no items requiring detailed consideration, such charges as damages to persons and property, claims for lost freight, gratuities, insurance, rentals, etc., being representatives of this class. These minor items, it is true, should certainly receive a careful scrutiny, but it is unlikely that any considerable saving can be effected in this direction unless the previous management has been specially careless.

It therefore remains to make general mention of a few other matters of importance, and then, in conclusion, briefly to summarize the results arrived at in the preceding papers.

In the first place, then, we should avoid the common error of reducing the clerical force employed in general offices. If a wayfarer lost in the forest, and endeavoring in the evening twilight to find some path leading him out in safety, should deliberately proceed to put out one or both of his eyes, we should think him insane to say the least; and yet this same species of insanity, one might almost call it, is often displayed by a railway manager, who, while seeking to find the path whereby his company may extricate itself from the intricate maze of financial disaster, and the threatening gloom of receivership and foreclosure, deliberately proceeds to maim or destroy those organs of sight most needful to it in its search for the way of deliverance.

A skillful clerical force, properly handled, and producing such statistics, in such form not as the auditor, but as the general officers who are to use them, may deem best suited to their requirements, may be truly considered the eyes of the corporation—eyes quick to discover and call the attention of general authority to the details requiring their special attention. To think that any considerable saving is to be effected by the reduction of such a force shows with how little care the question has been considered.

For example, the average annual cost per mile operated of maintaining road-bed and track on Connecticut railroads in 1883 was \$1,547, which for a road of 75 miles would amount to \$116,055 per annum.

Now, assume that the question under consideration is whether or not to discharge an office clerk, a small portion of whose time is occupied in preparing statistics of the material, tools and supplies issued and used in the maintenance of these 75 miles of track, and whose salary, at \$60 per month, amounts to \$720 per annum. In this case, if his statistics effect a saving in the road department of only three-quarters of one per cent., that saving will more than pay his salary, to say nothing of the results of his work in other departments.

In a communication to the *Railroad Gazette* of June 2,

1882 (page 325), D. E. Grove, in considering this same question, illustrates with the care of a road of some 450 miles in length, where the new fuel agent increased his office pay-roll 300 per cent. and was thereby enabled within two years to reduce the fuel consumed by locomotives by full 40 per cent. On his subsequent promotion, his successor, inaugurating a so-called economy in his office expenses, at once increased this fuel consumption until in less than 18 months it was higher than before the 40 per cent. reduction was effected.

A series of editorials on "Operating Expenses," will be found in the *Gazette*, issues of May 12 to 16, 1882, in which this same subject receives considerable attention. It is there shown that on the Lake Shore road the salaries of officers and clerks only amount to about 2½ per cent. of the operating expense account, and in the case of the Pennsylvania Railroad the cost of keeping account of what becomes of the money expended in maintenance of way is only about 0.9 of 1 per cent. of these expenses, or about one-tenth of 1 per cent. of the entire operating expense account.

"The cost," says the writer, meaning thereby the cost of such clerical work, "is very apt to be overestimated." And again, referring to the above figures, he thus continues:

Which indicates how hopeless it is to expect to make any material reduction by reducing the cost of clerk hire or dispensing with such services. * * * The delusion which it is important to point out, and which is held by some railroad officials, is that the economy of the management of a railroad is in reverse proportion to the number of draftsmen and clerks employed. * * * If the cost of operating is to be materially diminished we must aim at more important expenses. * * * The expenses which are most to be feared are those of which no record are kept, and which are, therefore, incapable of comparison and analysis.

The manager is here referred to this series of editorials, covering ground similar to that canvassed in these papers, and a perusal of which can not fail to profit the careful reader.

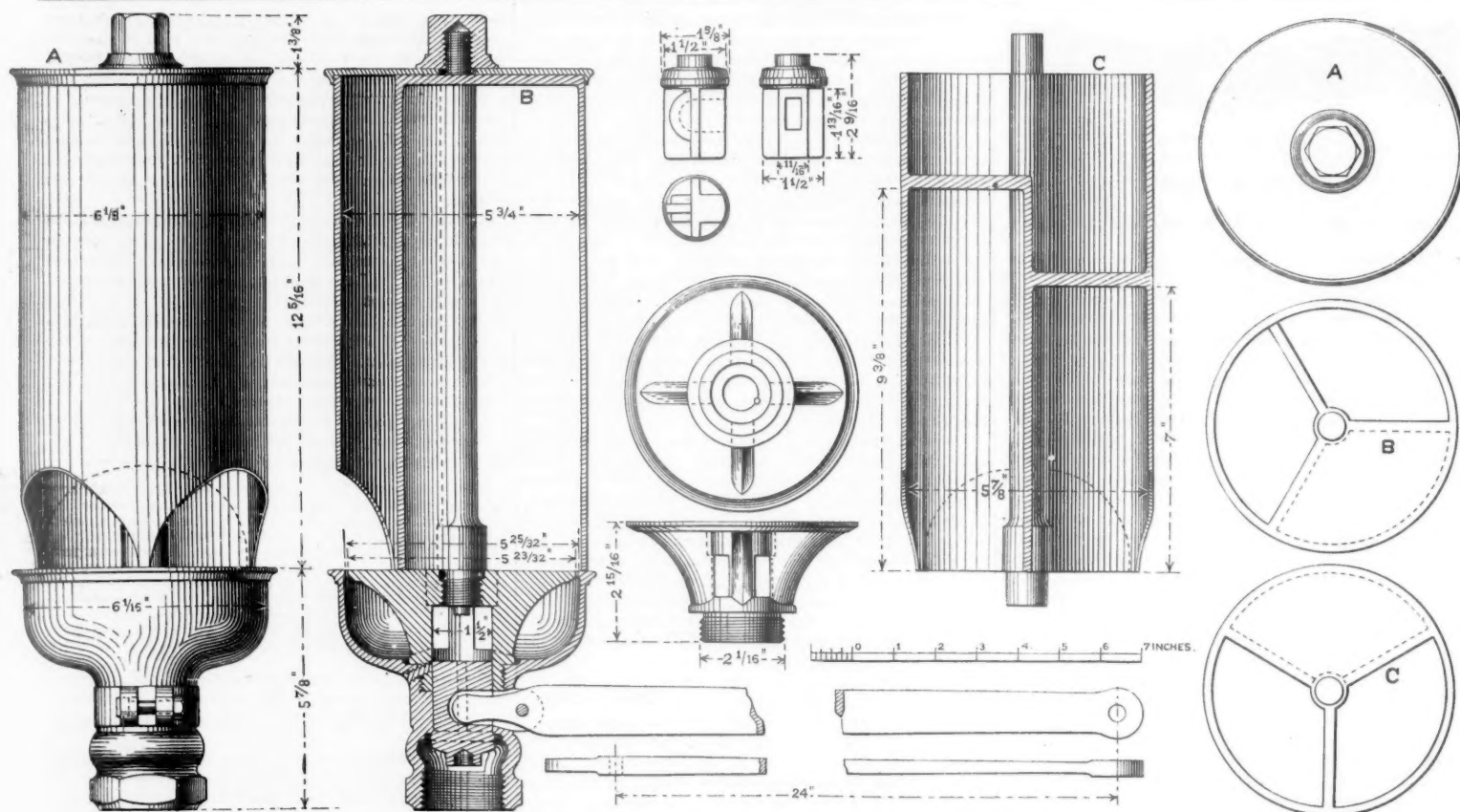
Nor can I conclude my own papers on this subject of retrenchment without quoting liberally from other sources to show with what uniformity the current of opinion sets steadily in the same general direction. I wish to refer the reader, first, to a recent pamphlet of 18 pages on "Efficient Railway Management," by the General Manager, Mr. H. S. Haines, of the Savannah, Florida & Western Railway. The system therein fully described and outlined in the following extract would seem to be specially fitted to the requirements of a service endeavoring, by rigid economy, to keep operating expenses within fixed limits:

We found [says Mr. Haines, recounting his own experience] that under organized governments the officials who had to account for the disposition they had made of the nation's revenue did so by means of a budget. That is, they started the year with a detailed estimate of what they intended to spend in each department, and then kept to this line as near as circumstances would permit. So we established a budget. We called on the chief of each department to state in detail, under specified heads, how much he would require to operate his department for a year; we added these estimates together, found the annual expense arrived at in this way to be greater than seemed to us to be judicious, called a conference of all in interest, discussed the various items, and got the total estimated annual expense down as low as was thought to be practical if we were to have efficient service. The detailed estimate in each department was then divided into twelve equal monthly parts, and the head of each department was charged with the control of the expenditures appended thereto.

The machinery by which all this was put into practice is minutely and fully described in the pamphlet, which is published by Willard A. Smith, No. 184 Dearborn street, Chicago, Ill., and the same is heartily commended to the consideration of all railway officials.

After all has been done that can be to economize in the operating department, relief can still be obtained in another way, which, however, does not strictly fall within the scope of my subject, and to which I shall therefore merely allude, the way being, to endeavor to increase earnings by building up or creating traffic. In this connection the pamphlet by Francis J. Lee, on "The Development of Local Passenger Traffic," published by the *Railroad Gazette* in 1879, will be found both practical and helpful, and the recent attempts by sundry railroads to increase their suburban, or commutation business should also be made the subject of study. Competitive business should likewise be investigated, with a view to determining whether the road is obtaining its due proportion; and if not, to ascertaining the causes of the failure, and devising a remedy therefor.

It will be observed that in these papers I give little space to the question of incurring present expense in order to obtain future economy—that is, an economy spread over a long series of years, and not markedly manifested at first. It is unquestionably good policy, provided the means are at hand, to improve the character of the road-bed, rails, wheels, etc., even at increased present expense, if thereby an ultimate reduction of operating expenses can be obtained; but such questions, I think, have little in common with retrenchment proper, meaning thereby an immediate reduction of the operating expense account which will bring relief during the current fiscal year. Just as soon as a mechanic is able, he should provide himself with the best tools the market affords, for the character of his work is bound to be limited by the excellence of his tools; but until then he should not helplessly hold up his hands, but endeavor, with the poor tools at his disposal, to earn money with which to obtain better ones. The point I make is, I think, sufficiently plain. Such questions are for the consideration of well-to-do, rather than struggling corporations, and, as regards the latter, which are a very considerable if not the greater class, future economy must, until better times, stand aside in favor of present retrenchment. The main thing is to get through the present



LOCOMOTIVE WHISTLE, CHESAPEAKE & OHIO RAILROAD.

fiscal year all right. "Sufficient unto the day is the evil thereof." Let the morrow take care of itself.

Those of my readers, however, who, being in the service of the rich and prosperous, may wish to pursue this line of inquiry further, can, I think, do no better than to consult the recent and able paper of William P. Shinn, C. E., read before the American Society of Civil Engineers, and which, together with the discussion thereupon, in which many well-known railway officials participated, have been widely noticed and copied by railway and technical journals.

It now only remains for me in conclusion briefly to summarize the results arrived at in this and the foregoing papers:

We have found, first, that in the item of fuel for locomotives, amounting roughly to about one-eighth of the total operating expenses, there is much room for retrenchment. That the inferiority of the American, as compared with Continental and particularly English practice, is to be attributed in the main to careless methods of fuel consumption, remaining unchecked through the lack of suitable systems of fuel accounts such as prevail abroad and have been already adopted on a few of our American roads.

Second, We have found the road department responsible for about one-sixth of the total expenses, and that while small savings may be effected by reducing rates of pay, the main relief here must come from a reduction of force, in effecting which much of the detail must be worked out by the road-master, who should have good judgment, and be a man eminently fitted for his position and able to discriminate nicely at which of many services he had best chiefly employ his reduced force; a man able to detect and correct time-wasting methods of doing work, as well as the direct waste of either time or material.

Third, We have found that train and station service absorbs about one quarter of the entire expense account, and that here likewise but small relief can be obtained by reducing rates of pay. It should be the endeavor here to reduce to a minimum the number of men per train, and the actual number of trains, and to run them at as low rates of speed as the exigencies of the service will permit; to increase to a maximum the average number of loaded cars per train, and the mileage of trainmen per unit of pay. The hauling of empty or partially loaded cars should be avoided as far as possible, and economy should be specially studied in the handling of traffic at important stations.

We have also found how important it is that any attempt to retrench should be the result of a systematic and well-considered movement in each and every department of the operating force; proceeding generally from the executive head of the corporation, and worked out in its various details by the several departmental officers; and how greatly this is facilitated by establishing an annual budget of expenses, and endeavoring to keep within its limits. Enough has been adduced to show the importance of statistics properly kept as an indispensable aid in planning and carrying into effect any system of retrenchment, not the least of whose functions is to inform the manager which are the chief items of expense, and likewise the folly of that penny-wise but pound-foolish policy which saves its penny by the discharge of a few clerks whose carefully prepared statistics alone enable the saving of very many pounds to be effected. We have also found that where all has been done that can be to effect a reduction of expenses, the ship may yet be kept afloat if we can only succeed in either building up or creating traffic, thus increasing

the earnings of the corporation and the fund from which expenses must be met.

In the several papers which have preceded, and in which these various matters have been discussed, I have at times quoted at some length from various published volumes, newspaper articles and pamphlets, mainly to call attention in passing to what seemed, in my opinion, valuable sources of information, wherein could be found much that would be of use to the railway manager in his endeavor to retrench and curtail the operating expense account, and by quoting at length I thought these sources would be more likely to be thus put to their proper use, than if I passed them by with less extended notice.

And now, finally, I think I can scarcely better conclude this series of papers, than in the language of Professor Vose, taken from page 456 of his "Manual for Railroad Engineers," already referred to, in which he enumerates the following ways whereby, as he thinks (and I am sure we shall all agree with him), an increase of railway profits may be effected:

First, To manage the traffic so as to cause the cars to carry more complete loads, thus to reduce the ratio of the non-paying load.

Second, To arrange the trains so as to give the largest number of cars to each engine.

Third, The reduction of speed of both passenger and freight trains to the lowest standard consistent with the demands of the business.

Fourth, To diminish as far as possible express trains, except so far as reducing the number of stops shortens the time of traversing the road.

Fifth, Not to increase the number of trains beyond a reasonable accommodation of the traffic.

Sixth, So controlling the movement of the rolling stock that the greatest amount of service may be derived from it.

Seventh, Adjusting the tariffs, where the business is chiefly in one direction so as to attract return traffic that the cars may not run without a load.

Eighth, Reducing the friction by which the cost of repairs of rolling stock is diminished and the facility for economical transportation proportionally increased.

Here I must take leave of my subject, but I cannot but think that a careful study of the different authorities cited in these papers would be of very great assistance to the manager seeking a more economical administration of railway affairs; and to that extent, at least, will what I have written be of service to railway men, if no further.

EDWIN A. HILL.

The Efficiency of Brakes.

RIVERSIDE, Iowa, May 25, 1885.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I. With a given brake under exactly the same conditions, except size of wheels, upon which will it be most effective, a 33-in. or 42-in. wheel, and what is their relative retarding power?

II. With the same brake is there any difference in retarding power upon chilled wheels and steel-tired wheels?

Your opinion on the above, and reasons therefor, are desired.

G. D.

[I. There is no difference, for the reason that the retarding effect in foot-pounds is as (not equal to) pressure \times distance, and the distance through which the wheel slides under the brake-block is the same in each case, either per minute or per foot moved over by the train. II. There undoubtedly is some difference, but

how much cannot be stated with any precision, for there are no adequate experiments. What evidence there is indicates that the difference is not great, but is rather in favor of the cast-iron wheels. Thus, the difference between cast and wrought brake-shoes on steel tires was found in the Galton-Westinghouse tests to be about 20 per cent. in favor of cast shoes on first application, but after they had been applied 10 or 12 seconds this difference disappeared. On the other hand, the coefficient of sliding friction of steel tires on steel and on iron rails was found to be slightly higher on iron than on steel. Minute differences of conditions in successive tests with the same materials would appear from the tables published in the *Railroad Gazette* of May 23 to make more difference than any probable difference due to the use of cast iron or steel tires, so that anything but a careful series of tests might give deceptive results.—EDITOR RAILROAD GAZETTE.]

Engine Whistle for Passenger Service.

The accompanying engraving represents a peculiar form of whistle used on the Chesapeake & Ohio Railway on all passenger engines. The bell of the whistle is divided vertically into three compartments by radial partitions. Each compartment is of a different height and consequently gives a different note. The theory of the whistle is that these different notes will blend in one harmonious whole. We understand that the dwellers along the line of the Chesapeake & Ohio are not ardent worshippers of Herr Wagner and the music of the future, and therefore are not educated up to the harmony evoked by these whistles. Hitherto they merely observe, on hearing the peculiar sound, "There's the Atlantic express the other side of the Alleghenies; you may hitch the horse in the buggy in a couple of hours' time, Joe, and I'll drive to the depot."

From this we may infer that a passenger train may be easily distinguished from a freight by the sound of the whistle when the train itself is out of sight, and some distance off.

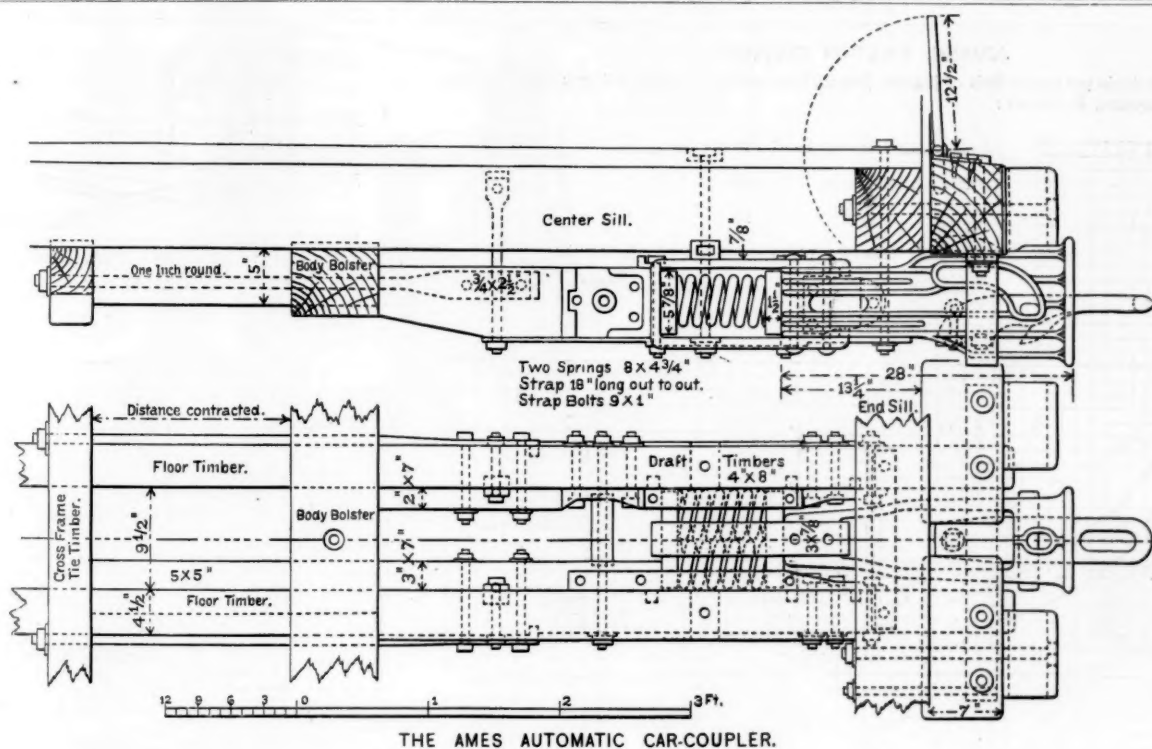
Joking apart, however, the whistle appears to be a considerable improvement on the ordinary style, and the fact that the approach of a passenger train can be distinguished from that of a freight is very convenient to passengers waiting at stations. We understand that the whistles are manufactured under a patent owned by the Ashcroft Valve Company.

Interchange of Cars and Protection against Bad Wheels.

The regular meeting of the New England Railroad Club was held May 27, some 70 members and others being present.

The President, Mr. J. W. MARDEN, of the Fitchburg Railroad, announced the above question for discussion in a few pertinent remarks, asking suggestions as to how railroads can be protected against the use of inferior wheels, and as to whether it was the fault of the railroads or the manufacturers that they are used.

Mr. W. W. SNOW (Ramapo Wheel & Foundry Co.) read a paper in which he maintained that the best cast-iron wheels could not be produced for less than about \$12, and when wheels were sold for less than this amount the material com-



THE AMES AUTOMATIC CAR-COUPLER.

posing the mixture was reduced by the use of inferior stock to correspond with the price.

There was a free and full interchange of views on the question by Messrs. J. W. Marden (President), F. D. Adams, John Coughlan, F. M. Curtis (Old Colony), J. B. Fletcher (National Dispatch Line), W. W. Snow and Geo. F. Cochnower. They urged the necessity of earnest and immediate action to procure the most durable wheels. It was said, however, surprising as it may seem, that some of the railroads in this country had adopted the practice of buying cheap wheels, especially for supplying the needs of the interchange service, and the authority for this statement seemed to be beyond controversy.

In the light of this startling fact it was thought that some remedy should be resorted to for the purpose of protection. In relation to the New England makers, it was said by Mr. Snow that he thought they were producing a good wheel.

The President then offered the following resolutions, which, after full consideration and some changes suggested by Messrs. F. D. Adams and Mr. J. W. Marden, were unanimously adopted:

"Resolved, That we, the members of the New England Railroad Club, deprecate and condemn the use of cheap or poor wheels under cars run in interchange service.

"Resolved, That it is the sense of the New England Railroad Club that there should be a standard wheel made of the best charcoal iron, of uniform size and weight, for use in interchange service, and we would respectfully recommend to the Master Car-Builders' Association that measures be taken at once to secure its adoption.

tral & Hudson River has just completed fitting out 100 cars. The Old Colony has also ordered couplers for 25 cars, and the Union Tank Line, the Worcester & Nashua and others, lots for experimental purposes. The company reports also that several large railroads are considering its introduction.

The essential features of the coupler have been in no way changed or modified, but the details of the draw-head, it is claimed, have been changed for the better in all respects.

Experiments on Journal Friction and Train Resistance.

We give below the chief conclusions on the subject of journal friction in starting trains, which were drawn from the experiments made with the apparatus illustrated in our issue of May 22.*

The tests were made with three different loads, corresponding as nearly as might be to the loads on bearings of a loaded car, empty car and truck alone. The further details of the manner of making the tests, which were designed to guard against error so far as possible, hardly need to be given in full.

In order to derive as much insight into the general laws of friction as might be possible from these tests, they were compared with those previously made by the writer on railroad rolling stock by the gravity method already referred to with

3. At velocities higher than 0+, but still very low, the same general law obtains. The coefficient falls very slowly and regularly as velocity is increased, but is constantly more and more affected by differences of lubrication, load and temperature.

4. A very slight excess of initial friction proper (varying from $\frac{1}{2}$ lb. to 2 lbs.) could generally (but not always) be observed over that which continued to exist at the nearest approach to a strictly infinitesimal velocity which it was possible to obtain. This difference was, by analogy, ascribed solely to the fact that the lowest continuous velocity attainable was not strictly infinitesimal, and the final conclusion was drawn that—

5. There is no such phenomenon in journal friction as a friction of rest or a friction of quiescence, in distinction from (i. e., differing in amount from) friction of motion at slow velocities, and due to the fact of quiescence. Consequently, the use of such a term, although convenient, is scientifically inaccurate, in that it ascribes the phenomenon to the wrong cause, and to a cause which is not necessary for its existence. The fact that friction of rest, as such, appears to exist, is due solely to the fact that no journal or other solid body can be instantly set into rapid motion by any force, however great. There must be a certain appreciable instant of time during which the velocity is infinitesimal and gradually increasing.

This interesting fact, which is believed to have been here observed for the first time (no other apparatus being known to have been used suitable for determining it), was determined with great completeness by many tests. Very slow motion could be produced at any time by revolving the driving pulley of the lathe by hand when geared for a slow speed. With a little experience, the weight on the scale-beam could be placed in advance at a point which would be a trifle less than the initial friction proper, and (when properly placed) it would barely lift when motion first began, and then have to be moved back a notch or two only, to weigh the friction which continued to exist indefinitely. Similarly, when a test at comparatively high speed was about to be concluded, the scale-weight would be placed to measure the same pressure, or a little less, as existed in starting, and it was always found to indicate in stopping substantially the same friction as in starting. The same test was made by interrupting tests at speed, so as to give a continuous motion, but to suddenly reduce the speed to 0+. These tests were repeated again and again, with practically identical results.

Comparing these results with others, they agree very closely indeed with the writer's conclusions from the results of his gravity tests, as will be seen below. In the tests by Mr. Beauchamp Tower no low speeds nor low pressures at all were tested, since they began at a journal speed corresponding to 12 miles an hour, where the writer's tests left off, and gave no pressure less than 100 lbs. per square inch.

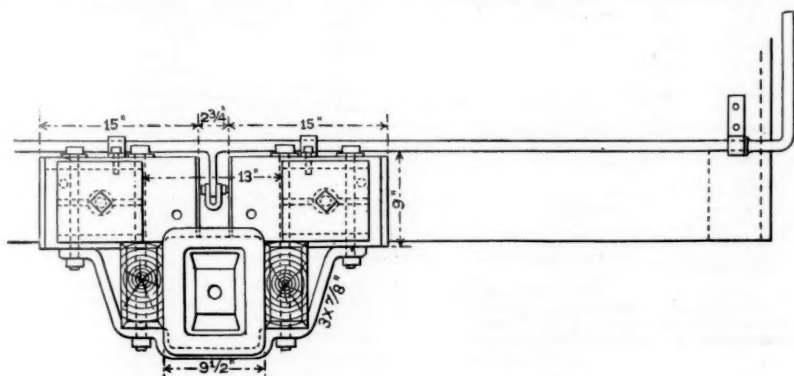
Including all other known results on this subject, we have:

"Initial" Journal Friction (i. e., at velocity of 0+).	
	Lbs. per ton.
Writer's conclusions from journal tests, above say . . .	19 to 25
Writer's conclusions from gravity tests of rolling stock (see Trans. Am. Soc. C. E., Feb., 1879). "at least" . . .	14 to 18
Prof. R. H. Thurston ("Friction and Lubrication," page 175), W. Va. oils . . .	22 to 28
" . . . sperma . . .	14 to 28
" . . . lard . . .	14 to 22
Prof. Kimball (Am. Jour. Sci., March, 1878, or "Friction and Lubrication," page 186) . . .	22 to 31
In addition, it may be noted that the writer has taken pains to observe with some care at various times that in ordinary service no railroad cars can start themselves from rest, nor can they, in general, be started without the use of much force, on a grade of 0.7 per cent. (= 14 lbs. per ton, 30 ft. per mile); but that they will generally (but not always) start of themselves on a grade of 1.1 to 1.2 per cent. (= 22 to 24 lbs. per ton, 58 to 63 ft. per mile), indicating an "initial" friction of . . .	20 to 24

These results agree wonderfully well with each other, the averages running 18, 16, 25, 20, 18, 25 $\frac{1}{2}$ and 22 lbs. per ton, the average of all being 18.0 to 25.0 lbs. per ton, or 20 $\frac{1}{2}$ lbs., as the general average of all. This corresponds to the accelerating force of gravity on a 1 per cent. (52.8 ft. per mile) grade, and that being also the lowest grade, by universal railroad experience, upon which cars can be relied on to start off from a state of rest with little or no assistance, the correctness of this coefficient may be considered as well determined.*

But as respects the friction of journals when coming to

* On a 0.7 per cent. grade (14 lbs. per ton) the writer found it impossible in several instances for six men pushing, two with pinch-bars, to start two loaded box-cars into motion. In no single instance out of over sixty did cars start without some assistance. This indicates that a statement on page 14 of "Friction and Lubrication," "The resistance in starting . . . has for its measure $\frac{3}{4}$ of 1 per cent., or 8 $\frac{1}{2}$ lbs. p. r. ton," requires correction; being inconsistent indeed with experimental results given in the same volume.



THE AMES AUTOMATIC CAR-COUPLER.

"Resolved, That it is also the sense of the New England Railroad Club that any road replacing a defective wheel with a new one, as provided for under rules Nos. 10, 11 and 12, for the interchange of traffic, shall do so, giving the same guarantee which they procure or which is allowed to them by the manufacturer of said new wheel. The guarantee should cover a period of not less than three or four years."

There followed a very earnest and interesting discussion of the various features of the interchange question, and the meeting then adjourned to the fourth Wednesday in September.

Ames Automatic Car Coupler.

The engravings represent the latest and most improved form of this coupler and the mode of its attachment, the design having been prepared by consultation between the proprietors of the coupler and various officers of the Vanderbilt system of lines, with a view of fitting it for convenient use in repairs of cars on those lines. The whole now requires only 9 inches space between centre-sills. The draw-head is cast with ribs, as shown, so as to give the utmost strength and lightness, and two springs are used. The uncoupling levers likewise have been slightly modified.

The coupler, it is said, is now being applied to a considerable number of cars. The Merchants' Dispatch Transportation Co. has ordered the coupler for 300 new cars, and specifies it as part of the equipment. The Boston & Albany has ordered 600 and has just put on 100. The New York Cen-

tral & Hudson River has just completed fitting out 100 cars. The Old Colony has also ordered couplers for 25 cars, and the Union Tank Line, the Worcester & Nashua and others, lots for experimental purposes. The company reports also that several large railroads are considering its introduction.

The observations under this head were exceptionally complete, and the conclusions reached were as follows:

1. Friction at very low journal speed of 0+ is abnormally great, and more nearly constant than any other element of friction, under varying conditions of lubrication, load and temperature. It varies from 18 to 24 lbs. per ton (coefficient, 0.09 to 0.12) for load of from 30 to 280 lbs. per square inch. Within those limits it is not greatly modified by load or temperature.

2. This abnormal increase of friction is due solely to the velocity of revolution, continuing unchanged so long as the velocity is unchanged and returning to the same amount whenever the velocity is reduced to the same rate, barring exceptionally slight variations, probably due to differences of lubrication and temperature. It is not appreciably affected by the fact that the journal may be just starting into motion, or is just coming to rest, or is temporarily reduced to a velocity of 0+ during continuous motion.

* Experiments with New Apparatus on Journal Friction at Low Velocities. By A. M. Wellington, C. E. Trans. Am. Soc. C. E., December, 1884.

JOURNAL FRICTION DIAGRAMS.

The intensity of the strain per square inch of journal (longitudinal section) is indicated graphically in this and the following diagrams, as follows:

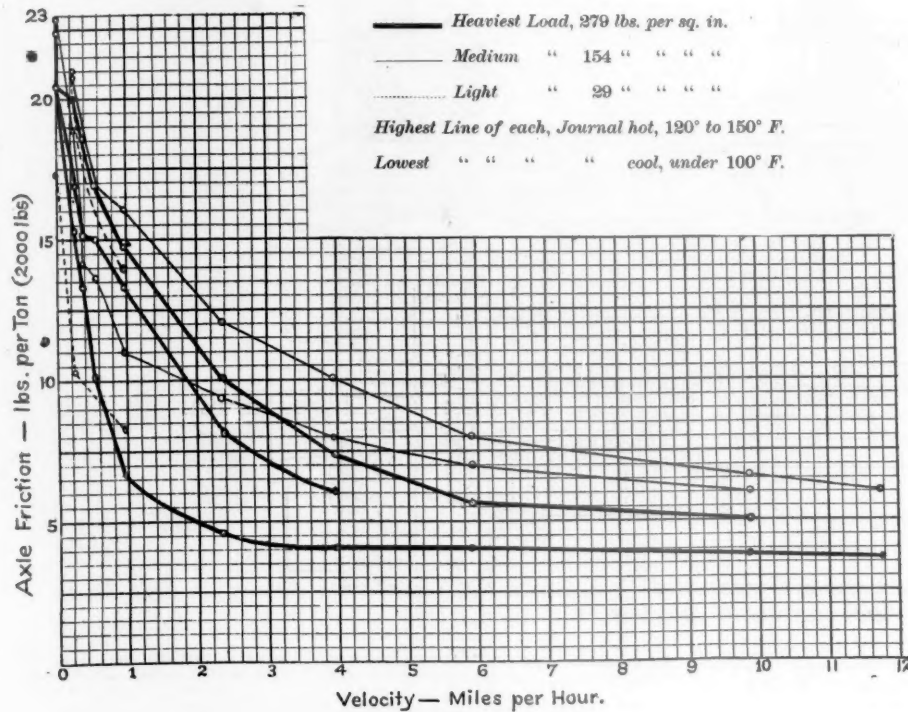


Fig. 2.

Diagram of Results of Tests as Tabulated Below.

NOTE.—In all these diagrams the journal speed has been reduced to its equivalent train velocity in miles per hour and the coefficient of friction to its equivalent in lbs. per ton tractive resistance to the locomotive.

ABSTRACT OF TESTS MADE WITH APPARATUS SHOWN IN RAILROAD GAZETTE, MAY 22.

West Virginia Mineral Oil. Free lubrication by pad of waste. Resistances are expressed in pounds per ton of train resistance. Divide by 200 for coefficient of friction.

SPEED OF JOURNAL.		LOAD AND CONDITION OF JOURNAL. (3 ₁₆ x 7.)										HIGLEY ROLLER B'RG.			
Revolutions per hour....	Equivalent speed of car miles per hour.....	1,439 lbs. = 29 lbs. per sq. in. = 2.88 tons per car.		7,439 lbs. = 157 lbs. per sq. in. = 14.88 tons per 8-wheel car.						13,439 lbs. = 279 lbs. per sq. in. = 28.88 tons per 8-wheel car.				Load, 7,439 lbs. +	Load, 13,439 lbs. +
		Cool.	Hot.	Cool.	Cool.	Cool.	Hot.		Cool.	Warm.	Hot.				
0+	0+	...	24.5	21.5	23.6	22.9	24.1	{ 22.4 } { 20.0 }	20.9	20.9		6.7	4.9		
144	0.34	24.5	17.3	21.0	14.1	18.8	21.5	20.8	15.3	16.9	20.1	6.2	4.8		
212	0.37	...	10.3	...	Grew hot	14.1	Grew hot	18.8	13.3	15.2	18.6	5.9	4.8		
327	0.54	...	...	...	13.7	...	17.0	10.1	15.0	16.9	5.6	4.7	
600	0.98	...	13.9	...	11.0	16.1	16.1	6.7	13.3	14.6	5.6	4.6			
1,440	2.36	...	8.3	...	9.4	Cooled in water.	12.1	4.6	8.1	10.0	4.8	3.5			
2,400	3.93	...	...	...	8.0	...	10.5	4.1	6.1	7.4	4.0	3.1	
3,600	5.89	...	...	...	7.0	6.7	8.0	4.1	...	5.7	...	2.7	
6,000	9.82	...	...	...	6.0	...	6.7	3.8	...	5.0	3.0	2.2	
7,300	11.78	...	...	...	5.1	...	6.0	3.6	...	...	...	...

Velocity in miles per hour x 9 = (approximately) journal speed in feet per minute.

rest, Professor Thurston's results differ markedly from the writer's. He finds this friction, "at the instant of coming to rest" to be nearly constant instead of varying considerably, with the pressure, and to be equivalent to only 5 or 6 lbs. per ton, in some cases only 2 to 3 lbs. per ton,* instead of 14 to 28 lbs. per ton, as at the instant of starting. It seems rational that there should be this difference, since the journal is more likely to be well lubricated in coming to rest, but the writer did not find it so, and the point was tested so many times in so many different ways that he feels compelled to believe that the discrepancy arises from the theoretical deficiency in Prof. Thurston's apparatus, before alluded to, for testing rapidly varying and almost instantaneous changes of coefficient. That such a change of resistance, if it be called upon to do work, dynamically, before it can express itself statically upon the index, cannot but introduce a possible source of error, is made still plainer if we remember that a force of this kind which was strictly instantaneous, however great, could not move the pendulum, and hence express itself upon the index, at all.

NORMAL COEFFICIENT OF JOURNAL FRICTION AT ORDINARY OPERATING VELOCITIES.

Certain general facts seem to be clear from all the various tests here considered:

The first and most important of these is that the character and completeness of lubrication seems to be immensely more important than the kind of the oil, or even pressure and temperature, in affecting the coefficient. This is very clear from the diagrams (fig. 2 to 6) showing the various results. Mr. Tower found that lubrication by a bath (whether barely touching the axle or almost surrounding it) was from six to ten times more effective in reducing friction than lubrication by a pad. By this method of lubrication Mr. Tower succeeded in reducing the coefficient in a large number of

* "Friction and Lubrication," page 175. On page 209 it is stated that "it is nearly constant, and may be taken at 0.03," equivalent to 6 lbs. per ton.

tests to as low a point as 0.001, equivalent to only 0.2 lbs. per ton of tractive resistance, and the general average in the bath tests, under all varieties of load and speed, is given as only 0.00139, or 0.278 lbs. per ton, against 1.96 to 1.95 lbs. per ton with syphon-lubricator, or pad under journal. These results are very far below any heretofore reported, as will be seen from the following general average of results; not considering now the comparatively minor variations produced by ordinary working differences in temperature, load, etc.

The normal journal friction, under favorable conditions, deduced from various series of tests, may be summarized as follows for velocities greater than 10 miles per hour, or 90 ft. per minute, journal speed:

	Lbs. per ton.
Beauchamp Tower, bath of oil	0.278
Thurston, light loads	1.9
Thurston, heavy loads	2.75
Wellington (gravity tests of cars in service), light loads	6.0
" " heavy loads	3.9
" " direct tests (as shown in fig. 2)	5.1
Thurston, inferior oils (Friction and Lubrication, p. 173)	3.7
Morin, continuous lubrication	4.8
	3.0
	6.0 to 10.8

These discrepancies, especially as they are accompanied by many minor ones, are very instructive, as showing that the character of lubrication is the great cause or variation of coefficient. Thus, Thurston's experiments show almost everywhere a very marked advantage in sperm oil over all others for reducing the coefficient. This does not appear at all in Mr. Tower's tests. Thurston also finds that with sperm as a lubricant and temperature 90° F., increasing the load from 100 to 200 lbs. per square inch increases the coefficient materially. On the other hand, Mr. Tower, who agrees almost precisely with Thurston with sperm at 90° and 100 lbs., finds that increasing the pressure to 200 lbs. materially decreases the coefficient. The extent of these discrepancies is shown in fig. 6. Other minor discrepancies of this kind

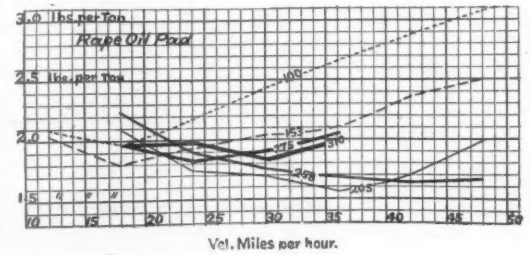
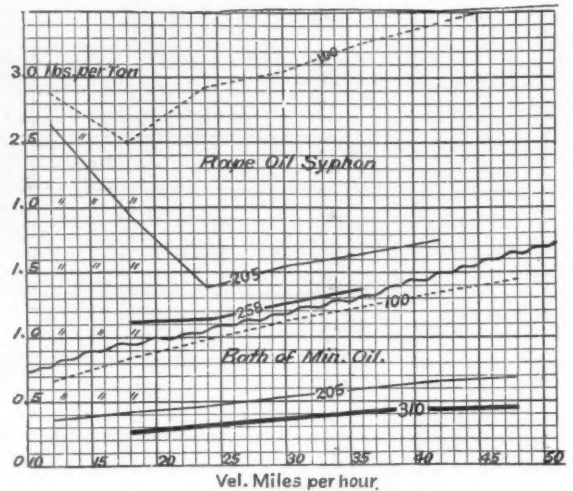


Fig. 3.



Figs. 4 and 5.

Results of Mr. Beauchamp Tower's Tests, giving Effects of High Velocity, Variation of Pressure and Differences of Lubrication upon Coefficient of Friction.

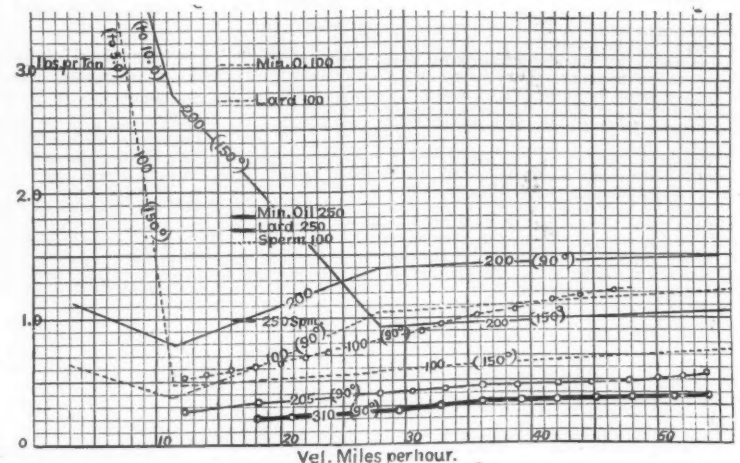


Fig. 6.

Comparative Results of Prof. R. H. Thurston's Tests with Sperm Oil and Mr. Beauchamp Tower's Tests with Sperm Bath.

The latter indicated thus: —○—○—○—○—

(The most notable fact in this diagram is, that while Thurston's and Tower's tests agree almost precisely, with sperm oil, at 90° temperature and 100 lbs. per square inch, increasing the pressure to 200 lbs. per square inch caused a marked increase of coefficient in Thurston's tests and an equally marked decrease in Tower's tests.)

INTENSITY OF LOAD PER SQUARE INCH INDICATED BY THICKNESS OF LINES.

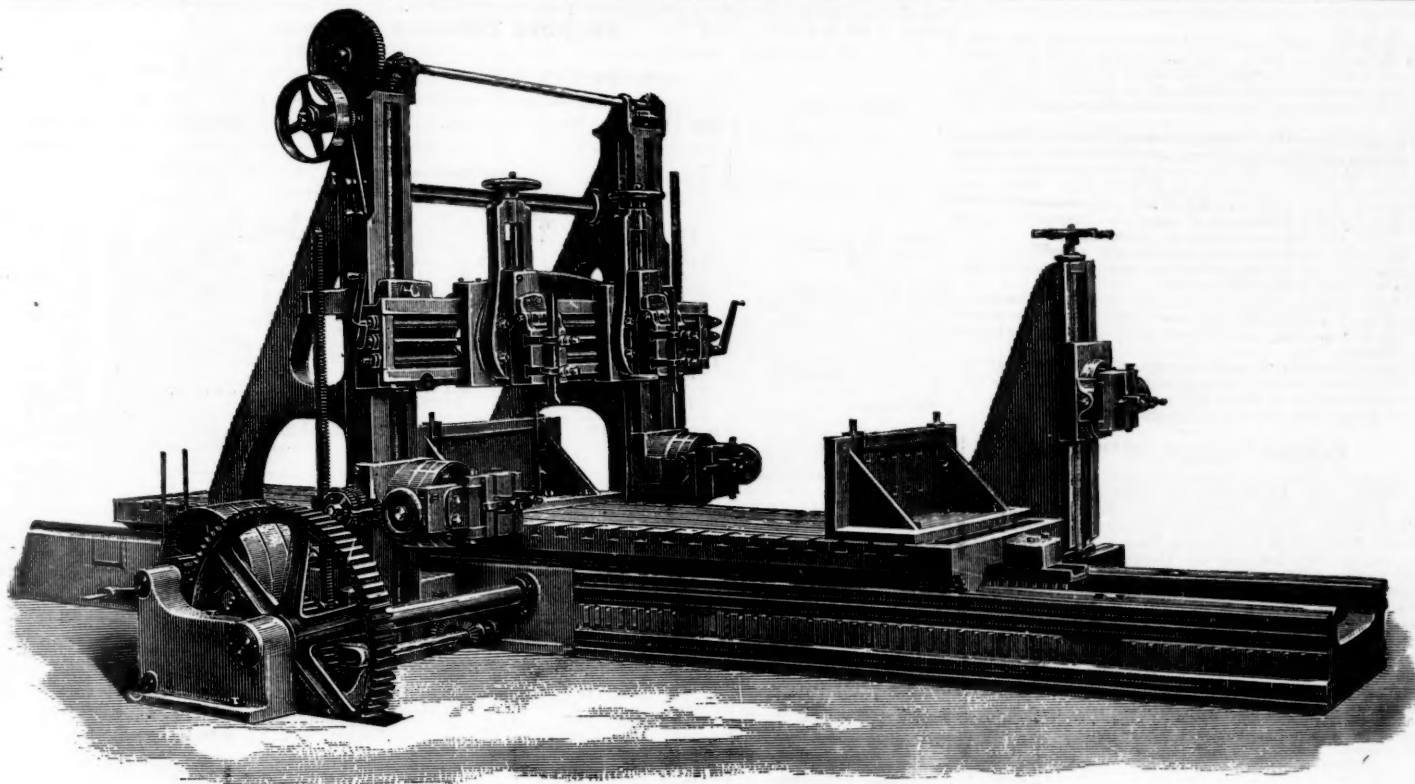
might be pointed out. They are not, it is believed, to be taken as indicating a lack of either care or correctness in either experimenter, but simply as showing the overmastering effect of minute differences in the condition of the lubrication. This was also curiously shown in two ways in Tower's experiments:

1. It was accidentally discovered that with bath lubrication the bearing is actually floated on a film of oil between the lubricated surfaces, which is so truly a fluid that it will rise through a hole in the top of the bearing in a continuous stream and exert a pressure against a gauge equal to more than twice the average pressure per square inch on the bearing. This is precisely what theory would require if the lubricant were a perfect fluid.

2. Tower's apparatus required that the journal should be revolved first one way and then the other. It was found that the friction was always greater when the direction of motion was first reversed. The increase varied considerably with the newness of the journal. "Its greatest observed amount was at starting and was almost twice the nominal friction, and it gradually diminished until the normal friction was reached, after about 10 minutes' continuous running. This increase of friction was accompanied by a strong tendency to heat, even under a moderate load. In the case of one brass which had worked for a considerable time it almost entirely disappeared." It is with apparent justice concluded that the phenomenon must be due to the interlocking, point to point, of the surface fibres after having been for some time stroked in one direction.*

In view of the variations of several hundred per cent.,

* The phenomenon thus observed has an interesting bearing, it may be noticed in passing, upon a theory deduced by Dr. Charles B. Dudley, chemist of the Pennsylvania Railroad, that the fibres of steel in the top of a rail-head are in reality subjected to a bending stress, and it lends much support to his conclusion that such tests ought, consequently, to be an approximate measure of the probable durability.



IRON PLANER.

often, which are produced in the lowest coefficients of friction by minute differences in lubrication, as shown by comparison of Thurston's and Tower's tests, and in view also of the further facts (1.) that the lubrication of railroad journals is far more imperfect than an oil bath, and rarely equal even to pad lubrication, and that the oil is rarely free from dust and of uniformly good quality.

(2.) That the condition of the surface of ordinary railroad journals and bearings is and necessarily must be inferior to such as are stated to have been employed in Thurston's and Tower's tests; it seems reasonable to conclude that the writer's direct tests (Table I. and fig. 2) correctly represent journal friction under ordinary working conditions, and that it may be taken at 5.0 to 6.0 lbs. per ton with empty cars, and 3.5 to 4.0 pounds per ton with loaded cars or heavy passenger cars, at the velocity of minimum friction, which appears to be from 10 to 15 miles per hour.

These results closely correspond with the results obtained by the writer from gravity tests of cars in ordinary service; the latter results giving 0.5 to 1.0 per ton greater resistance, but including rolling friction between rail and wheel, as well as journal friction.

Planing Machine.

We are indebted to *Engineering* for the accompanying illustration and description of a planing machine made by Messrs. Francis Berry & Sons, Lowerly Bridge, England.

The machine is made to plane 16 ft. in length, 6 ft. in width, and 5 ft. in height. The cross slide is fitted with two tool boxes, and is made to rise and fall by power. Each of the tool boxes is self-acting in vertical, horizontal and angular motions. There is also one tool box on the face of each standard self-acting in the vertical feed. The bed is of the box form, and is 27 ft. in length; the table is in two parts each 8 ft. long; on each of the tables there is fixed an angle plate fitted with two cramping jaws, each worked by screws, for holding down the plates while being planed. During the time one lot is being planed the man is fixing another lot on the other half of the table, so that the machine is not standing idle an unnecessary length of time. The two halves of the table can be coupled together by turned bolts and cotters, so as to enable work to be planed the whole length if required. On both sides of the front part of the bed are planed T slots for fixing a pocket carrying a side standard, with a tool box having a vertical range of feed 3 ft. 6 in. from the top of the table and arranged to move outward to a distance of 4 ft. 6 in. from the centre of machine; this extra tool box is used for larger work than will pass through the machine, and can be changed to either side. Projections are cast on the sides of the bed for moving the side standard along the bed. The whole machine is very strong and well adapted for the work, the total weight being 49,000 lbs.

TECHNICAL.

Engineers' Club of Philadelphia.

A regular meeting was held at the rooms in Philadelphia, May 16, President J. J. de Kinder in the chair; 34 members and 2 visitors present.

Mr. Kenneth Allen exhibited and described an Improved Protractor, designed by Mr. John R. Freeman, Lawrence, Mass., and made by Messrs. Darling, Brown & Sharpe, Providence, R. I., with special regard to accuracy and finish. It consists of a plate 6 by 12 in., bearing an 11 in. semicircle graduated to 20 min. The vernier, reading to minutes, is carried on an arm, through the centre, to which may be accurately attached different arms, 20 in. long, graduated to mm., 1/16 in., 1/32 in., 1/64 in., and 1/128 in.

The error from eccentricity of centre is determined within 1/4 min. The total error at any part of arc is believed to be less than 1/4 min. In use, 100 angles are easily plotted in an hour, and in a year's work its price—\$130—is estimated to have been saved. The whole is of nickel-plated steel.

Mr. Dana C. Barber, Assistant Engineer of the Philadelphia Water Department, in charge of Sanitary Surveys and Investigation of River Pollution, presented on account of the Pollution of the Upper Schuylkill—being a brief résumé of

some of the more notable and peculiar features, viz.: the acid pollution from the coal mines, the cesspool drainage of Reading, the Pottstown water supply, the winter disturbances in the quality at Phoenixville, the drainage of State Insane Asylum at Norristown, etc. President de Kinder added some remarks on the same subject.

Mr. C. W. Buchholz presented notes as to the connection of the Baltimore & Ohio with the Philadelphia & Reading through the city of Philadelphia.

The B. & O., crossing from the south, must not only find a route through Philadelphia to New York, but must have a line so located as to accommodate the enormous traffic of Philadelphia, with ample terminal facilities. This can only be accomplished by connecting the new line with the P. & R., or with the Pennsylvania Railroad, and since the B. & O. is in opposition to the Pennsylvania, it seems to follow that it must connect with the P. & R. somewhere on Pennsylvania avenue or Willow street, the Junction Railroad having been absorbed by the Pennsylvania after the lease of the Philadelphia, Wilmington & Baltimore.

Three such lines are possible and they have all been surveyed and carefully considered. The first line thoroughly examined leaves near Fifty-eighth street and the Chester Branch of the P. & R. and runs under West Philadelphia by tunnel and open cuttings, emerging at about Thirty-first and Hamilton streets; thence over the yard of the Pennsylvania, over the Schuylkill River and above all the streets, to its connection with the P. & R. on Pennsylvania avenue at Twenty-first street.

The second line crosses the river below Gray's Ferry, and running due east between Tasker and Dickinson streets, connects with a line running south from Ninth and Green. All of this line would be above the surface of the streets.

The great amount of personal property and valuable stores destroyed, and the enormous cost involved in their construction, led to the abandonment of these two lines, especially as no corresponding advantages would be gained by the people of Philadelphia or by the railroad companies, for so much destruction of valuable real estate, valuable only for limited purposes.

The Schuylkill River East Side road was finally adopted because it interferes less with the traveled highways of the city than any other line possible; it destroys no valuable residences or costly retail stores, but on the contrary, it will improve every property on the east side of the Schuylkill, on account of the magnificent sites there offered for large manufactories. A rival railroad built there will be a source of profit to the property owner, will increase the commerce on the Schuylkill River, and will largely add to the wealth of Philadelphia, without being a nuisance to its citizens.

Electric Lights for Cars.

The Pennsylvania Railroad Co. continues the experiments with lighting cars by electricity from Brush storage batteries, using the lights on a train running between Altoona and Pittsburgh; the arrangement has worked satisfactorily. The storage batteries are charged in the company's shops by connection with a Brush dynamo-electric machine. It takes about nine hours' running to charge the batteries with sufficient electricity for the round trip. The intention is, should the plan be found advisable for general use on through trains, to establish electric plants at different stations for charging the batteries.—*Philadelphia Railway World*.

ANNUAL REPORTS.

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Georgia Pacific.

This company owns a partly completed line, which is at present in three sections: First Division, Atlanta, Ga., to Coalburg, Ala., 177, with 8 miles of branches; Second Division, Cane Creek, Ala., to Columbus, Miss., 75.4, with a branch, 1 mile; Third Division, Greenville, Miss., to Johnsonville, 29.5, and Stoneville to Sharkey, 22.5 miles. The total mileage at the close of last year was 313.4 miles, an increase of 49.4 miles during the year. The average mileage worked was 300, against 172 in 1883.

Stock. 7,000,000	First mortgage bonds. 3,334,500
Income bonds. 3,031,000	Accounts and balances. 325,662
Profit and loss. 34,833	
Total. 13,525,493	
Road and equipment. 13,444,845	
Sundry accounts. 26,487	
Cash. 54,163	
Total. 13,525,495	

The stock and bonds have all been issued to the Richmond & Danville Extension Co., contractor for building the road.

The traffic for the year was as follows:

Passengers.	Pass. or tons carried.	Miles.	Receipt.	Per mile.
225,042	5,228,523	275 cts.	0.62 ct.	
270,963	17,328,739	1.57 "	0.62 "	

No comparisons either of traffic or earnings can well be made, as the company operated nearly twice as much road last year as in 1883.

The earnings for the year were:

Freight.....	\$230,471	\$45,238	\$68,155	\$341,864
Passengers.....	122,194	22,030	35,216	179,440
Other.....	23,968	2,806	2,897	29,671
Total.....	\$376,633	\$70,074	\$101,298	\$547,975
Expenses.....	251,601	54,214	56,679	362,494
Net earnings.....	\$125,032	\$15,860	\$44,589	\$185,481
Gross earn. per mile.....	2,092	1,030	1,947	1,828
Net.....	695	233	857	618
Per cent. of exps.....	66.8	77.4	56.0	66.2

The Third Division is of 3 ft. gauge; the others of 5 ft. gauge.

The result of the year was as follows:

Net earnings, as above. 185,481	
Balance from previous year. 20,750	
Total. 206,231	
Extraordinary repairs, wash-outs. 16,503	
Interest on bonds. 154,830	
Construction, etc. 19,203	
Balance. 15,703	

Interest paid does not include \$22,000 assumed by the Richmond & Danville Extension Co. under the terms of its contract.

The President's report says: "The car trust notes, \$240,805, are the aggregate amounts held by the Railroad Equipment Co. against this company, as of Sept. 30, 1884. These notes do not bear interest, and run through 10 years; in quarterly payments. They were given on account of the 5 locomotives and 340 freight cars procured from said Railroad

Equipment Co., under a contract between it and this company dated Feb. 4, 1884. This equipment, it will be noted, is in addition to the equipment of \$2,000 per mile, in engines and cars, furnished by the Richmond & Danville Extension Co. to this company, under the terms of construction contracts.

"The gap between the western terminus of the First Division at Coalburg and the eastern terminus of the second division at Cane Creek is 40 to 42 miles, contingent upon final determinations at certain points on the located line. Work was commenced on the first 10 miles of this gap, westward from Coalburg, by the Richmond & Danville Extension Co., in May, 1884, but was soon thereafter discontinued.

"The great importance of filling this gap speedily is now recognized by all parties concerned, and it is hoped that means will soon be devised therefor.

"The building of several new branch lines will soon be entered upon. These are short roads leading to mines about to be opened, and they will be built upon terms favorable to this company.

"The gap between the western terminus of the Second Division at Columbus, and the eastern terminus of the Third Division at Johnsonville is about 140 miles. Upon this gap no work is being done, nor is any presently projected."

Southern Pacific, of California.

This company owns the Northern Division, San Francisco to Tres Pinos, 100½ miles; the Central Division, 60½ miles; the Monterey Branch, 15 miles, and the Santa Cruz Branch, 21 miles, making 197 miles in all. It also owns the Southern Division, Huron to Yuma, 528½ miles, with Los Angeles Branch, 24½ miles, making 553 miles, and did own last year the Colorado Division, Mojave to the Needles, 242½ miles, since transferred to the Atlantic & Pacific Co. The report is for the year ending Dec. 31.

The Northern Division is operated by the company; the Southern (and Colorado) divisions are leased to the Central Pacific Co. The Monterey and the Santa Cruz roads are owned by this company, though nominally leased.

The general account is as follows, condensed:

Capital stock.....	\$44,030,100
Funded debt.....	32,932,000
Accounts due.....	339,397
Taxes in suspense.....	446,791
Sinking fund.....	40
Land trust fund.....	248,752
Profit and loss.....	2,508,105
Total.....	\$80,514,595
Construction.....	\$74,213,285
Real estate.....	603,770
Equipment.....	3,333,344
Building and structures.....	1,449,377
Machinery, materials and fuel.....	292,445
Office furniture, etc.....	69,564
Accounts due company.....	742,168
Cash.....	20,642
Total.....	\$80,514,595

There was no change in stock last year; the funded debt was decreased by \$718,000 during the year, \$405,000 bonds having been redeemed from proceeds of land sales and \$313,000 by the sinking funds.

The earnings of the Northern Division (197 miles) operated by the company were:

	1884.	1883.	Increase.	P. c.
Freight.....	\$702,563	\$624,069	\$137,894	22.1
Passengers.....	641,294	600,044	41,250	6.9
M. ul. etc.....	64,319	57,900	6,519	11.2
Total.....	\$1,408,176	\$1,282,513	\$125,663	14.5
Expenses.....	\$35,189	\$38,871	\$3,682	9.5
Net earnings.....	\$1,372,987	\$1,243,642	\$129,345	10.4
Gross earnings per mile.....	7.03	6.31	.72	11.4
Net earnings per mile.....	7.03	6.31	.72	11.4
Per cent. of exps.....	5.14	5.14		

The expenses were increased by damages from wash-outs and other local causes. The business has shown a steady increase for several years.

The result of the year was as follows:

Net earnings, Northern Division.....	\$642,987
Rental Southern Division.....	2,032,843
Sundry receipts.....	29,536
Redemption of bonds from land sales.....	405,000
Total.....	\$3,110,366
Interest on debt.....	\$1,862,340
Sinking fund.....	100,000
Taxes and assessments.....	292,375
Miscellaneous.....	315,398
Total.....	\$2,570,113
Balance for the year.....	\$530,253

Under miscellaneous payments are included \$185,686 for improvements of road. The sale of the Colorado Division to the Atlantic & Pacific Co. was noted at the time of its occurrence.

Alabama Great Southern.

The report of the English corporation which owns this road has no statements of its operations, merely giving the gross earnings of the 295 miles from Chattanooga to Meridian as follows:

	1884.	1883.	Increase.	P. c.
Gross earnings.....	\$1,165,103	\$1,058,783	\$106,320	10.1
Per mile.....	3,949	3,589	360	10.1

The report says: "The operating expenses amounted to 87.66 per cent. upon the receipts, as against 71.14 per cent. in 1883. The accounts of the American corporation show a balance to the credit of net revenue of \$54,873, or \$11,291, which includes the sum of \$23,482, or \$4,832 brought forward on Dec. 31, 1883. From this balance the sum of \$2,570 has to be provided to defray the expenses of the English company for 1884, leaving \$5,720, which it is proposed to carry forward. While regretting their inability to advise the payment of a dividend on the preference shares for the past year, the directors beg to remind the shareholders that the dividend on those shares is cumulative. The sum of \$311,539 was expended on construction and rolling stock during the year 1884, of which \$155,009 were in respect of track and roadway, \$92,928 on account of new rolling stock, and \$63,754 for new steel rails. The Vicksburg, Shreveport & Pacific line was opened throughout in August, 1884, and when pending arrangements for a regular transfer across the Mississippi river have been completed it is expected that there will be a material increase of traffic, both in passengers and goods, between Texas and the southwest, and all northern and northeastern points. In their report for the year 1883 the directors expressed the hope that the operating expenses, which were then at the rate of 71.14 per cent., would be considerably reduced in 1884. This expectation, they regret to say, has not been realized. Instead of there being a reduction, they reached the high figure of 87.66 per cent. The directors have reason to assume that the results of the past year's working are purely exceptional. With regard to suspense account, a large expenditure was made upon the road in 1884, which the Executive Committee concur in thinking ought not in fairness to be charged to that year, but should be spread over that and succeeding years. This ex-

RAILROAD EARNINGS IN APRIL.

NAME OF ROAD.	MILEAGE.					EARNINGS.					EARNINGS PER MILE.				
	1885.	1884.	Inc.	Dec.	P. c.	1885.	1884.	Inc.	Dec.	P. c.	1885.	1884.	Inc.	Dec.	P. c.
EASTERN ROADS.															
Boston, Hoosac Tun. & West.	87	87	.....	.....	.....	\$ 37,354	\$ 35,318	2,036	.....	.....	\$ 5.8	\$ 429	\$ 406	23	5.8
Danbury & Norwalk	37	37	.....	.....	.....	16,230	16,834	.....	.....	.....	.....	369	455	.....	16 3.6
Grand Trunk.....	2,918	2,918	.....	.....	.....	1,161,083	1,257,61	.....	95,628	7.5	398	431	.....	33	7.5
Long Island.....	354	354	.....	.....	.....	201,711	186,596	15,115	.....	8.1	570	527	43	.....	8.1
N. Y. & New England	400	400	.....	.....	.....	262,102	275,507	.....	13,405	4.9	655	689	.....	34	4.9
N. Y., Ontario & Western	373	373	.....	.....	.....	138,100	142,549	.....	4,449	3.1	370	382	.....	12	3.1
N. Y., Sus. & Western	147	147	.....	.....	.....	90,331	82,278	8,053	.....	9.8	614	566	54	.....	9.8
Northern Central.....	322	322	.....	.....	.....	450,010	454,749	.....	4,739	1.0	1,388	1,412	.....	14	1.0
Pennsylvania & Reading	2,268	2,103	165	.....	7.9	3,704,800	4,156,000	.....	451,419	10.8	1,634	1,976	.....	342	17.3
Philadelphia & Reading	1,560	1,560	.....	.....	.....	2,343,973	2,855,673	.....	511,700	17.9	1,503	1,831	.....	328	17.9
Rochester & Pittsburgh	294	294	.....	.....	.....	90,679	81,161	9,518	.....	11.7	308	276	32	.....	11.7
Rome, Watertown & Og.	417	417	.....	.....	.....	151,476	132,957	18,519	.....	13.9	363	319	44	.....	13.9
West Jersey	201	188	13	.....	6.9	94,207	93,185	1,022	.....	1.1	469	496	.....	27	5.4
Total, 13 roads.....	9,378	9,200	178	.....	1.9	8,743,046	9,770,727	54,263	1,081,934	10.5	932	1,062	.....	130	.....
Total inc. or dec.....			178	.....	1.9				1,027,681				.....	130	12.3
SOUTHERN ROADS.															
Alabama Great Southern	290	290	.....	.....	.....	82,831	85,366	.....	2,475	2.9	286	294	.....	8	2.9
Chn. N. O. & Tex. Pacific	336	336	.....	.....	.....	194,008	211,495	.....	17,487	8.2	577	620	.....	52	8.2
East Tennessee, Va. & Ga.	1,098	1,098	.....	.....	.....	276,998	291,519	.....	14,821	5.1	252	266	.....	14	5.1
Florida Ry. & Nav. Co.	528	477	51	10.7	.....	92,009	94,747	.....	2,738	2.9	174	199	.....	25	13.0
Ill. Cen. Southern Div.	711	578	133	23.0	.....	340,472	302,008	37,864	.....	12.5	479	524	.....	45	8.6
Louisville & Nash.	2,065	2,065	.....	.....	.....	1,157,605	1,125,291	32,314	.....	2.9	561	545	16	.....	2.9
Mobile & Ohio.....	528	528	.....	.....	.....	126,537	167,760	.....	41,253	24.8	240	318	.....	78	24.5
Nashville, Chatta. & St. L.	574	554	20	3.6	.....	165,381	188,167	.....	22,786	12.1	288	340	.....	52	15.3
N. Orleans & Northeastern	195	195	.....	.....	.....	57,893	24,000	31,503	.....	119.3	297	135	162	.....	120.0
Norfolk & Western	512	503	9	1.8	.....	266,484	211,522	.....	5,038	2.4	403	421	.....	18	4.3
Rich. & Danville.....	757	757	.....	.....	.....	301,097	317,181	.....	16,084	5.1	398	419	.....	21	5.1
Char. Col. & Augusta	370	356	14	3.9	.....	52,828	54,816	.....	1,938	3.6	143	154	.....	11	7.2
Col. & Greenville.....	290	296	.....	.....	.....	39,481	45,728	.....	6,247	15.6	133	154	.....	21	13.6
Georgia Pacific.....	318	288	30	10.4	.....	40,853	32,079	17,774	.....	55.5	157	111	46	.....	41.4
Virginia Midland	352	352	.....	.....	.....	124,094	130,841	.....	6,747	5.1	353	372	.....	19	5.1
Western N. Carolina	274	208	66	31.8	.....	37,249	33,834	3,455	.....	10.2	136	165	.....	27	16.6
South Carolina	247	247	.....	.....	.....	68,846	73,310	.....	4,464	6.4	279	297	.....	18	6.4
Vicksburg & Meridian	142	142	.....	.....	.....	32,059	37,054	.....	4,995	13.5	226	261	.....	35	13.5
Total, 18 roads.....	9,593	9,270	323	.....	.....	3,405,465	3,429,678	122,910	147,123	.....	355	370	.....	15	.....
Total inc. or dec.....			323	.....	3.5				24,213	0.7			.....	15	4.1
CENTRAL GROUP.															
Chi. & Eastern Illinois	252	252	.....	.....	.....	118,565	108,548	10,017	.....	9.2	471	431	40	.....	9.2
Chi. & West Michigan	410	410	.....	.....	.....	118,216	144,568	.....	26,352	18.2	288	353	.....	65	18.2
Cin. Ind., St. L. & Chicago	342	342	.....	.....	.....	197,677	197,821	.....	104	0.1	578	579	.....	1	0.1
Cin., Wash. & Baltimore	284	284	.....	.....	.....	131,171	141,008	.....	5,837	4.1	476	497	.....	21	4.1
Clev., Akron & Columbus	144	144	.....	.....	.....	39,631	40,533	.....	902	2.2	275	281	.....	6	2.2
Detroit, Lansing & No.	258	258	.....	.....	.....	115,809	138,226	.....	22,337	16.2	449	536	.....	87	16.2
Evansville & Terre Haute	146	146	.....	.....	.....	60,649	67,470	179	.....	0.3	415	414	1	.....	0.3
Flint & Pere Marquette	392	392	.....	.....	.....	168,454	216,321	.....	47,867	22.1	465	598	.....	133	22.1
Illinois Central, Ill. lines	553	553	.....	.....	.....	454,064	480,222	.....	25,558	5.3	477	504	.....	27	5.3
Ind., Bloom. & West.*	532	532	.....	.....	.....	169,892	168,111	1,781	.....	1.0	319	316	3	.....	1.0
Ohio Central.....	212	212	.....	.....	.....	67,878	86,236	.....	19,358	22.5	315	407	.....	92	22.5
Ohio & Mississippi	615	615	.....	.....	.....	301,909	332,778	.....	30,779	9.2	491	541	.....	50	9.2
Ohio Southern	130	130	.....	.....	.....	38,800	39,599	.....	790	2.0	298	305	.....	7	2.0
Peoria, Decatur & Ev.	254	254	.....	.....	.....	51,016	62,555	.....	11,539	18.4	201	246	.....	45	18.4
St. L., Alton & Terre Haute	195	195	.....	.....	.....	84,395	104,912	.....	20,517	19.5	433	538	.....	105	19.5
Main Line.....	198	198	.....	.....	.....	54,724	71,433	.....	16,709	22.5	397	518	.....	121	22.5
Belleville Line.....	138	138	.....	.....	.....	20,563	17,400	3,163	.....	18.2	337	285	52	.....	18.2
Tot. Ann Arbor & N. Mich.	61	61	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wabash, St. L. & Pacific.....	3,549	3,647	98	2.7	.....	1,114,488	1,187,141	.....	72,653	6.1	314	323	.....	9	2.8
Total, 18 roads.....	8,837	8,935	98	.....	.....	3,311,610	3,597,892	15,140	301,412	.....	375	403	.....	28	.....
Total inc. or dec.....			98	1.1	.....				280,272	7.9			.....	28	6.9
NORTHWESTERN ROADS.															
Bur., Cedar Rap. & No.	900	714	276	.....	39.0	245,457	217,576	27,881	.....	12.8	248	205	.....	57	19.0
Central Iowa.....	500	500	.....	.....	.....	92,221	122,908	.....	30,687	25.0	184	246	.....	62	25.0
Chi. & Alton.....	850	850	.....	.....	.....	500,025	607,291	.....	17,256	2.8	694	714	.....	20	2.8
Chi. Mil. & St. Paul.....	4,804	4,760	44	.....	0.9	1,924,000	1,948,636	.....	20,636	1.1	401	409	.....	8	2.0
Chi. & Northwestern	3,960	3,540	420	.....	2.6	1,835,800	1,832,161	3,639	.....	9.7	471	479	.....	8	1.7
Chi., St. P., Minn. & Omaha	1,460	1,500	20	.....	1.5	464,100	567,090	.....	103,998	18.3	312	421	.....	85	19.3
Des Moines & Ft. Dodge	138	138	.....	.....	.....	28,415	28,069	346	.....	1.2	206	223	.....	17	1.2
Ill. Central, Iowa lines	402	402	.....	.....	.....	119,403	130,703	.....	11,300	8.6	297	325	.....	28	8.6
Marquette, H. & Ont.	138	103	35	.....	34.0	23,972	24,204	.....	232	1.0	174	235	.....	61	26.0
Mil., Lake Shore & West.	480	390	90	.....	23.1	174,853	97,383	7,470	.....	7.7	218	250	.....	32	1.8
Mil. & Northern	227	227	.....	.....	.....	48,601	45,339	3,262	.....	7.3	214	199	15	.....	7.3
Minneapolis & St. Louis	420	420	.....	.....	.....	173,800	158,940	14,860	.....	9.3	414	378	36	.....	9.3
Wisconsin Central	440	440	.....	.....	.....	137,676	132,536	.....	5,140	12.2	313	278	35	.....	12.2
Total, 13 roads.....	14,609	14,044	565	.....	.....	5,792,253	5,893,735	82,527	184,079	.....	396	420	.....	24	.....
Total inc. or dec.....			565	.....	4.0				101,482	1.7			.....	24	5.7
ROADS NORTHWEST OF ST. PAUL.															
Canadian Pacific.....	2,794	2,033	761	.....	38.0	677,000	343,967	333,033	.....	97.0	242	169	73	.....	43.0
Northern Pacific.....	2,453	2,449	4	.....	0.2	877,665	1,441,545	.....	563,880	30.1	357	588	.....	231	39.0
St. P. & Duluth	227	227	.....	.....	.....	65,193	83,360	.....	18,167	21.9	287	367	.....	80	21.9
St. P., Minn. & Manitoba	1,397	1,387	10	.....	0.7	707,800	804,999	.....	97,190	12.1	501	590	.....	79	13.6
Total, 4 roads.....	6,871	6,096	775	.....	.....	2,327,658	2,673,871	333,033	679,246	.....	339	438	.....	99	.....
Total inc. or dec.....			775	.....	12.7				346,213	13.0			.....	99	22.5
SOUTHWESTERN ROADS.															
Fort Worth & Denver	110	110	.....	.....	.....	32,400	42,500	.....	10,100	23.8	295	386	.....	91	23.8
Gulf, Colorado & Santa Fe	536	536	.....	.....	.....	83,433	126,285	.....	40,852	32.4	159	230	.....	77	32.4
Kan. City, Ft. Scott & Gulf	389	389	.....	.....	.....	187,070	183,241	3,829	.....	2.1	481	471	10	.....	2.1
Kan. City, Sp'd & Memp.	282	282	.....	.....	.....	136,426	96,217	34,209	.....	35.8	463	341	122	.....	35.8
St. L., Ft. Scott & Wichita	182	100	82	.....	13.7	40,379	33,804	15,575	.....	45.8	271	211	60	.....	28.6
St. L. & San Francisco	804	750	54	.....	7.2	357,124	365,189	.....	6,365	1.7	444	485	.....	41	8.6
Texas & St. Louis	735	735	.....	.....	.....	67,550	41,865	25,885	.....	61.6	92	57	35	.....	61.6
Vicks., Shreveport & P.	170	95	75	.....	78.9	23,181	5,475	17,706	.....	321.9	138	58	78	.....	134.5
Total, 8 roads.....	3,208	3,057	151	.....	.....	932,763	892,876	97,204	57,317	.....	291	202	.....	1	.....
Total inc. or dec.....			151	.....	4.9			39,887	.....	4.5			.....	1	6.3
FAR WESTERN AND PACIFIC ROADS.															
Atchison, Topeka & S. F.	2,375	2,329	46	.....	1.9	1,297,825	1,306,000	.....	8,175	0.6	546	561	.....	15	2.7
Central Pacific.....	2,802	3,003	201	6.7	.....	1,735,000	2,030,079	.....	295,079						

RAILROAD EARNINGS, FOUR MONTHS ENDING APRIL 30.

NAME OF ROAD.	MILEAGE.					EARNINGS.					EARNINGS PER MILE.				
	1885.	1884.	Inc.	Dec.	P. c.	1885.	1884.	Inc.	Dec.	P. c.	1885.	1884.	Inc.	Dec.	P. c.
EASTERN ROADS.															
Bos., Hoos.T. & W.	87	87	...	...	...	\$ 135,911	\$ 127,103	\$ 8,808	\$	7.0	\$ 1,562	\$ 1,461	101	\$	7.0
Dan. & Norwalk	37	37	...	...	...	60,323	56,190	4,133		7.5	1,630	1,517	113		7.5
Grand Trunk	2,918	2,918	...	...	...	4,653,573	5,180,664		525,091	10.1	1,595	1,782	187	10.1	
Long Island	354	354	...	...	...	666,909	625,265	41,644		6.7	1,884	1,776	118		6.7
N. Y. & New Eng.	400	400	...	...	...	982,552	1,030,027		48,075	4.7	2,456	2,577	121		4.7
N. Y., Ontario & W.	373	373	...	...	...	518,170	514,485	3,685		0.7	1,389	1,380	9		0.7
N. Y., Susq. & W.	147	147	...	...	...	320,599	282,177	38,422		13.6	2,181	1,920	261		13.6
Northern Central	322	322	...	...	...	1,726,635	1,725,772	863			5,362	5,360	2		
Pennsylvania	2,268	2,103	165	...	7.9	13,693,490	15,159,907		1,466,417	9.7	6,037	7,209	1,172	16.3	
Phila. & Reading	1,560	1,560	...	...	...	7,904,486	9,241,959		1,337,473	14.5	5,067	5,920	853	14.5	
Rochester & Pitts.	294	294	...	...	...	341,337	302,772	38,565		12.7	1,161	1,040	121		12.7
Rome, W. & O.	417	417	...	...	...	482,168	456,001	26,167		5.7	1,156	1,094	62		5.7
West Jersey	201	188	13	...	6.9	303,076	312,164		8,488	2.7	1,511	1,060	449	8.9	
Total, 13 roads	9,378	9,200	178	...	1.9	31,761,829	35,015,026	162,347	3,385,544	9.2	3,390	3,806	416	10.9	
Total inc. or dec. ....	...	...	178	...	...	...	...	...	3,223,197	...	...	...	416	...	...
SOUTHERN ROADS.															
Ala. Gt. Southern	290	290	...	...	...	383,375	359,052	24,323		6.8	1,322	1,238	84		6.8
Cin., N. O. & Tex. P.	336	336	...	...	...	314,045	284,908	29,037		3.7	2,423	2,339	84		3.7
East Tenn. Va. & Ga.	1,098	1,098	...	...	...	1,200,318	1,261,008		60,690	4.8	1,023	1,149	126		4.8
Fla. Ry. & Nav. Co.	528	477	51	...	10.7	354,592	354,177	415		0.1	672	744	72		9.9
Ill. Cent. & So. Div.	711	578	133	...	23.0	1,566,996	1,372,950	194,046		14.2	2,204	2,375	171		7.2
Louisville & Nash.	2,065	2,065	...	...	...	4,693,177	4,367,777	325,401		7.4	2,273	2,115	158		7.4
Mobile & Ohio	528	528	...	...	...	683,668	683,576		9,908	1.4	1,295	1,314	19		1.4
Nash., Chat. & St. L.	374	354	20	...	3.6	712,023	792,473		80,450	10.2	1,240	1,430	190		13.3
N. O. & Nor-east	195	195	...	...	...	241,695	133,204	108,491		81.5	1,239	683	556		81.5
Norfolk & Western	512	503	9	...	1.8	852,435	860,197		7,762	0.9	1,665	1,710	45		2.2
Rich. & Danville	757	757	...	...	...	1,297,202	1,273,954	23,248		1.9	1,714	1,683	31		1.9
Char. Col. & Aug.	370	346	24	...	7.0	289,993	271,355	18,638		6.8	784	784	...	...	...
Col. & Greenville	296	296	...	...	...	251,197	234,069	17,128		7.3	849	791	58		7.3
Ga. Pacific	318	288	30	...	10.4	220,099	172,987	47,112		27.2	692	601	91		15.2
Va. Midland	352	352	...	...	...	449,138	466,909		17,771	3.8	1,276	1,326	50		3.8
Western N. C.	274	208	66	...	31.8	143,802	129,183	14,619		11.3	525	621	96		16.0
South Carolina	247	247	...	...	...	424,355	446,905		22,540	5.0	1,718	1,809	91		5.0
Vicks. & Meridian	142	142	...	...	...	147,030	163,582		16,552	10.1	1,035	1,152	117		10.1
Total, 18 roads	9,593	9,260	333	...	3.6	14,725,061	14,138,346	802,388	215,673	...	1,535	1,527	8	...	...
Total inc. or dec. ....	...	...	333	...	...	...	...	586,715	...	4.2	...	...	8	...	...
CENTRAL GROUP.															
Chi. & Eastern Ill.	252	252	...	...	...	497,988	452,487	45,501		10.1	1,976	1,796	180		10.1
Chi. & West Mich.	410	410	...	...	...	471,480	497,805		126,325	25.3	906	1,214	308		25.3
Cin., Ind. St. L. & Chi.	342	342	...	...	...	708,055	691,975	16,080		15.4	2,333	2,023	310		15.4
Cin., Wash. & Balt.	284	284	...	...	...	609,497	575,960	33,537		5.8	2,146	2,028	118		5.8
Cleve., Akron & Col.	144	144	...	...	...	143,463	141,061	2,402		1.7	996	980	16		1.7
Det., Lan. & No.	258	258	...	...	...	353,285	436,407		83,122	19.1	1,369	1,692	323		19.1
Ev. & Terre Haute	146	146	...	...	...	222,402	221,900	502		0.2	1,521	1,520	1		0.2
Flint & Pere Marq.	362	362	...	...	...	600,512	813,107		212,595	26.0	1,659	2,246	587		26.0
Ill. South. Ill. lines.	953	953	...	...	...	1,973,712	1,894,760	78,952		4.2	2,071	1,988	83		4.2
Ind., Bloom. & W.	593	593	...	...	...	762,830	730,519	32,311		4.4	1,434	1,373	61		4.4
Ohio Central	212	212	...	...	...	309,982	331,057		21,075	6.4	1,462	1,562	100		6.4
Ohio & Mississippi	615	615	...	...	...	1,372,952	1,367,732		54,776	4.1	2,070	2,156	86		4.1
Ohio Southern	130	130	...	...	...	143,054	140,492		6,438	4.3	1,100	1,150	50		4.3
Peoria, Dec. & Ev.	254	254	...	...	...	227,010	254,241		27,231	10.7	894	1,001	107		10.7
St. L., Alton & T. H.	195	195	...	...	...	383,371	476,641		93,270	19.5	1,966	2,444	478		19.5
Main Line	138	138	...	...	...	252,203	278,633		25,860	9.3	1,828	2,015	187		9.3
Belleville Line	61	61	...	...	...	85,763	64,861	20,902		32.2	1,406	1,063	343		32.2
Tol., Ann A. & N. M.	3,549	3,647	98	...	2.7	4,887,549	5,072,504		184,955	3.6	1,377	1,391	14		3.6
Wab., St. L. & Pac. ....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total, 18 roads	8,837	8,935	98	...	1.1	13,895,108	14,410,658	320,097	\$ 1,947	...	1,572	1,613	41	...	...
Total inc. or dec. ....	...	...	98	...	...	...	...	...	\$ 15,550	...	...	...	41	...	...
NORTHWESTERN ROADS.															
Bur., Ced. Rap. & No.	932	714	218	...	30.5	944,082	850,752	93,330		10.8	1,013	1,192	179		14.9
Central Iowa	500	500	...	...	...	311,097	447,204		56,107	12.5	782	894	112		12.5
Chi. & Alton	850	850	...	...	...	2,454,848	2,545,129		90,278	3.5	2,888	2,994	106		3.5
Chi., Mil. & St. P.	4,504	4,760	256	...	0.9	6,874,000	6,521,523	352,477		5.4	1,451	1,370	81		4.5
Chi. & N. W.	3,900	3,800	100	...	2.6	6,766,783	6,595,623	171,160		2.6	1,735	1,735	...	...	...
Chi., St. P., M. & O.	1,310	1,290	20	...	1.5	1,554,025	1,713,686		159,661	9.3	1,186	1,328	142		10.7
Des Moines & Ft. D.	138	138	...	...	...	114,168	107,348	6,820		6.4	827	778	49		6.4
Ill. Cent., Iowa lines.	402	402	...	...	...	470,366	536,017		65,651	12.2	1,170	1,343	173		12.2
Marquette, H. & O.	138	103	35	...	34.0	84,330	88,609		3,679	5.8	611	854	243		28.4
Mil., L. S. & W.	478	372	106	...	28.6	553,265	349,322	3,946		1.1	739	939	200		21.3
Mil. & Northern	227	227	...	...	...	180,535	162,218	18,317		13.3	785	715	70		11.3
Min. & St. Louis	430	430	...	...	...	621,746	538,366	83,380		15.5	1,480	1,282	198		15.5
Wisconsin Central	440	440	...	...	...	470,444	483,207		12,763	2.6	1,069	1,098	29		2.6
Total, 13 roads	14,539	14,016	523	...	3.7	21,279,692	20,938,401	739,430	338,139	...	1,464	1,494	30	...	...
Total inc. or dec. ....	...	...	523	...	...	...	...	341,291	...	1.6	...	...	30	...	...
ROADS NORTHWEST OF ST. PAUL.															
Canadian Pacific	2,794	2,008	786	...	39.2	2,006,565	1,122,826	883,739		78.7	718	559	159		28.4
Northern Pacific	2,453	2,449	4	...	0.2	2,692,823	3,554,658		861,835	24.2	1,098	1,451	353		24.3
St. P. & Duluth	227	227	...	...	...	277,391	282,217		4,826	1.7	1,222	1,243	21		1.7
St. P., Minn. & Man.	1,397	1,342	55	...	4.0	2,141,550	2,361,534		219,984	9.3	1,533	1,700	167		13.0
Total, 4 roads	6,871	6,026	845	...	14.0	7,118,329	7,321,235	883,739	1,086,645	...	1,036	1,215	179	...	...
Total inc. or dec. ....	...	...	845	...	...	...	...	...	205,906	...	...	...	179	...	...
SOUTHWESTERN ROADS.															
Ft. Worth & Den.	110	110	...	...	...	111,266	128,911		17,645	13.7	1,011	1,172	161		13.7
Gulf, Col. & S. F.	536	536	357,072	511,534		154,462	30.2	986	954	32		30.2
K. C., Ft. S. & Gulf.	389	389	...												



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EDITORIAL ANNOUNCEMENTS.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

APRIL EARNINGS.

Our table of April earnings this week has reports from 79 different railroads, whose aggregate mileage and earnings and average earnings per mile were:

	1885.	1884.	Inc. or Dec.	P. c.
Miles.....	59,610	57,871	+1,739	3.0
Earnings.....	\$28,127,371	\$30,223,132	-\$2,095,761	6.9
Earnings per mile.....	472	522	-50	9.6

The large decrease is the more important because last year also there was a small decrease from 1883 in April earnings per mile (0.8 per cent. in the average of 73 roads), while in 1883 there was a decrease of 2.2 per cent. from 1882, so that this is the third year of decreasing earnings per mile. The decrease is also larger than in previous months of this year, it having been 3.2 per cent. in January, 7 in the stormy month of February, and 1.2 in March. Perhaps this will appear more clearly by the amounts of increase and decrease reported in successive months:

January.	February.	March.	Three months.	April.
Increase.	Decrease.	Increase.	Decrease.	Decrease.
\$43,375	\$985,539	\$536,012	\$406,152	\$2,095,761

Thus the aggregate decrease in April was five times as great as the aggregate decrease for the previous three months, which were thought to be decidedly unfavorable.

We have heretofore considered the reports of many roads and of some groups of roads for April. Of the four roads northwest of St. Paul, all but the Canadian Pacific report a large decrease. In the aggregate this decrease is 13 per cent., and in earnings per mile 22½ per cent. Special causes of this have been noticed heretofore.

Of other roads in the far West, five of which report, all but the Denver, Rio Grande & Western show a decrease, and its increase is trifling. The aggregate decrease is 8.8 per cent., but the decrease in earnings per mile 6.8, the mileage being smaller than last year. The chief part of the decrease in earnings is by the Central Pacific, which has the decrease in mileage. The largest rate of decrease is 14 per cent., by the St. Joseph & Western.

The 13 roads west and northwest of Chicago, other than the two groups mentioned, earned in the aggregate only 1.7 per cent. less than last year, and 5.7 per cent. less per mile of road. The gains were all small, 12.2 per cent. per mile by the Wisconsin Central being greatest, and there were few large losses—19 per cent. per mile by the Burlington, Cedar Rapids & Northern, 25 by the Central Iowa, 19½ by the St. Paul & Omaha, and 26 by the Marquette & Ontonagon; but the large percentages of loss were all but one on small roads.

West and southwest of St. Louis eight roads report, having in the aggregate an increase of 4½ per cent. in total earnings, and a decrease of only 0.3 per cent. in earnings per mile. There are large percentages of both loss and gain, and the losses would certainly be

much the greater if the chief Texas and Arkansas roads reported. The Fort Worth & Denver has a decrease of 23½ per cent. in earnings per mile; the Gulf, Colorado & Santa Fe a decrease of 32½ per cent., and the increase of 61½ by the Texas & St. Louis brings its earnings up only to \$92 per mile, and the 134½ per cent. increase by the Vicksburg, Shreveport & Texas makes its only \$136. There is a small increase by the Ft. Scott & Gulf, and large ones by the Kansas City & Memphis and the Fort Scott & Wichita, contrasting with the small decrease of the Atchison, Topeka & Santa Fe (reported in another group). Generally the returns indicate that the Kansas and Missouri traffic has been good; the Arkansas and Texas traffic bad.

In the district east of the Chicago & Alton railroad, west of Pennsylvania and north of the Ohio, which is suffering especially from low rates and too many roads, 18 railroads report for April, all but four having a decrease in earnings, and in the aggregate a decrease of 8 per cent. in total earnings and 7 per cent. in earnings per mile, there being here also a decrease in mileage, the Wabash having turned over one of its unprofitable branches to the bondholders. The gains are 9.2 per cent. by the Eastern Illinois, 0.3 per cent. by the Evansville & Terre Haute, 1 by the Indiana, Bloomington & Western, and 18.2 by the Ann Arbor & North Michigan. The largest losses are 18 per cent. by the West Michigan, 16 by the Detroit, Lansing & Northern, 22 by the Flint & Pere Marquette, 22½ by the Ohio Central, 18½ by the Peoria, Decatur & Evansville (which heretofore has held its own pretty well), and 19½ by the Main Line and 28½ by the Belleville Line of the Alton & Terre Haute. More than one-third of the earnings of the 18 roads in this group were by the Wabash, which is largely west of the district, and no great trunk line connection reports. Omitting the Wabash, the decrease is nearly 10 per cent., and if all the roads reported it would probably be greater than that, though they were not doing well last year.

There are reports from 18 railroads south of the Ohio and the Potomac, and east of the Mississippi. These have a decrease of but 0.7 per cent. in total earnings and 4.1 per cent. in earnings per mile. Gains by three roads to New Orleans—the Southern Division of the Illinois Central, the Louisville & Nashville, and the New Orleans & Northeastern—and by the new Georgia Pacific, which had not fairly begun to work last year, alone prevent a considerable decrease in the South. Omitting these, the decrease would have been 18.7 per cent. in the total, and from \$316 to \$266 (19 per cent.) in earnings per mile. The gain of 120 per cent. by the New Orleans & Northeastern brings its earnings up to \$297 per mile—only about one-sixth below the average of the Southern group—but the increase of 41½ by the Georgia Pacific makes its earnings only \$157 per mile. The large decreases are 13 per cent. by the Florida system, 24½ by the Mobile & Ohio, 15½ by the Nashville & Chattanooga, 18½ by the Columbus & Greenville, 16½ by the Western North Carolina, and 13½ by the Vicksburg & Meridian.

The Southern railroads have maintained their earnings for many months much better than seemed possible, but there are signs now that there will be a general and considerable decrease there, though it may last but a few months. Until the next cotton crop, however, it will not be surprising if the decrease is large, and it should not be discouraging, for these roads having been doing well while generally elsewhere railroads were doing very ill.

We now come to the group east of Ohio, of which there are 13 reporting for April, as follows:

	1885.	1884.	Inc. or Dec.	P. c.
Miles.....	9,378	9,200	+178	1.9
Earnings.....	\$8,743,040	\$9,770,727	-\$1,027,687	10.5
Earnings per mile.....	932	1,062	-130	12.3

This is the worst showing of all, except northwest of St. Paul. Six of the roads have gains, but these are all small roads. The Rome, Watertown & Ogdensburg has the large gain of 14 per cent.; the Susquehanna & Western a gain of 9½ and the Long Island one of 8 per cent. In the aggregate, however, these gains are but one-tenth of the Reading's and one-ninth of the Pennsylvania's loss. The Grand Trunk's decrease is smaller than in several other recent months, but it had had the large decrease of 15 per cent. last year, and its decrease since 1883 is \$311,526, or 21 per cent. The local roads generally have small losses.

The percentage of increase or decrease in earnings per mile in each group in each of the four months ending with April, compared with last year, has been:

	January.	February.	March.	April.
East.....	-10.2	-13.5	-9.3	-12.3
South.....	+7.3	-3.5	+1.8	-4.1
North of Ohio.....	+0.8	-5.0	-0.9	-6.9
Northwest of Ohio.....	+4.9	-8.4	+9.8	-5.7
of St. Paul.....	-7.7	+4.0	-22.0	-22.5
Southwest of St. Louis.....	+1.5	+7.0	+4.6	-0.3
Far West.....	+15.3	+7.3	+3.5	-6.8
Total.....	-3.2	-7.0	-1.2	-9.6

In some of the groups the result is considerably modified at times by the inclusion of roads that do not report regularly, but not generally. It appears that in every group the comparison has been growing more unfavorable. We doubt if this will continue for the Northwest, where some of the traffic should be much larger hereafter than it was last year, but in the South the percentage of decrease is more likely to increase than decrease. In the other great groups, north of the Ohio and in the East, the condition was so bad in April that there is good reason to hope that it will not grow worse. In the Southwest and the Far West reports are too irregular to warrant a judgment.

Below we give for as many roads as possible the earnings per mile of road in April for six successive years:

	1880.	1881.	1882.	1883.	1884.	1885.
Ala. Gt. South.....	\$156	\$201	\$197	\$253	\$294	\$286
Atch., T. & S. F.....	594	568	615	576	561	546
Burl. C. R. & N.....	288	327	276	306	305	248
Canadian Pac.....	401	355	330	350	169	242
Central Iowa.....	377	723	708	687	676	619
Char., Col. & Aug.....	188	207	202	156	154	143
Chicago & Alton.....	646	665	665	701	714	694
Cinc. & E. Ill.....	576	609	506	491	431	471
Cinc. & N. W.....	574	659	601	490	479	471
Cinc. Mil. & St. P.....	569	321	356	436	409	401
Ch. St. P., M. & O.....	355	275	374	371	437	352
Chic. & W. Mich.....	271	261	353	353	288	288
Cin., Ind., St. L. & C.....	564	612	506	418	579	578
in, N. O. & T. P.....	518	495	515	620	577	577
Cin., Wash. & Balt.....	.....	.....	502	497	476	476
Cleve., Ak. & Col.....	231	246	277	282	281	275
Col. & Greenville.....	.....	143	145	154	154	133
Denver & Rio G.....	456	628	524	448	359	333
Des M. & Ft. Dodge.....	216	423	305	168	203	206
Det., Lansing & N.....	519	493	593	605	530	449
Flint & W. Mich.....	315	245	258	206	232	232
Evansville & T. H.....	.....	447	378	414	415	415
Flint & P. M.....	436	530	547	680	598	465
Grand Trunk.....	.....	.....	635	431	398	398
Gulf, Col. & S. F.....	.....	180	250	236	159	159
Ill. Cen. in Iowa.....	308	395	348	390	325	297
Ill. Cen. So. Div.....	386	492	428	458	524	479
Ill. Cen. in Ill.....	472	549	544	499	504	477
Ind., B. & West.....	526	367	371	311	316	319
K. C., Ft. S. & G.....	271	572	473	345	471	481
Long Island.....	447	448	483	497	570	570
Louisville & Nash.....	425	462	470	469	545	561
Marquette, H. & On.....	.....	190	385	173	235	174
Mil. L. S. & W.....	140	175	246	276	250	218
Mobile & Ohio.....	280	322	269	244	318	240
Nash., Chat. & St. L.....	340	393	318	293	340	288
N. Y. & New Eng.....	653	686	659	689	689	655
N. Y., Sus. & W.....	.....	.....	606	534	500	614
Norfolk & Western.....	334	407	401	446	421	403
Northern Central.....	1,188	1,495	1,306	1,402	1,412	1,398
Northern Pacific.....	258	290	464	391	588	357
Ohio Central.....	.....	253	227	293	407	315
Pennsylvania.....	1,863	1,990	1,973	1,983	1,976	1,634
Peoria, Dec. & Ev.....	231	210	204	236	246	201
Phil. & Reading.....	1,616	1,494	1,720	1,727	1,831	1,503
Rich. & Danville.....	332	431	347	353	419	398
Roch. & Pitts.....	.....	158	235	141	276	308
St. L., A. & T. H.....	.....	.....	.....	.....	.....	.....
Main Line.....	556	684	502	524	538	433
Belleville Line.....	662	530	557	457	518	397
St. L. & San Fran.....	330	448	398	378	485	444
St. P. & Duluth.....	.....	.....	326	366	367	287
St. P., Minn. & Man.....	508	575	526	649	580	501
South Carolina.....	278	344	323	325	297	279
Va. Midland.....	.....	315	357	372	353	353
Vicks. & Meridian.....	247	216	206	261	226	226
Wabash.....	447	413	411	346	323	314
Western N. C.....	.....	98	115	163	136	136
West Jersey.....	.....	419	404	496	469	469
Wis. Central.....	.....	238	305	283	276	513

Of 60 roads here 49 had smaller earnings per mile this year than last, and 40 smaller ones than in 1883. Compared with 1882, 23 have larger and 34 smaller earnings per mile than then; compared with 1881, 14 have larger and 33 smaller earnings; and compared with 1880, 20 have larger and 21 smaller earnings per mile this year. Of the whole number only the Kansas City, Fort Scott & Gulf, the Long Island, the Louisville & Nashville, the New York, Susquehanna & Western, and the Rochester & Pittsburg had larger earnings per mile this year than in any other of the six reported; while, on the other hand, the Atchison, Topeka & Santa Fe, the Cedar Rapids & Northern, the Central Iowa, the Charlotte, Columbia & Augusta, the Chicago & Northwestern, the Columbia & Greenville, the Denver & Rio Grande, the Detroit, Lansing & Northern, the Gulf, Colorado & Santa Fe, the Iowa lines of the Illinois Central, the Mobile & Ohio, the Nashville, Chattanooga & St. Louis, the Pennsylvania, the Peoria, Decatur & Evansville, the St. Louis & Terre Haute Main Line and its Belleville line, the St. Paul & Duluth, the Manitoba, and the Wabash had smaller earnings per mile this year than in any other of the six reported. Some rapid and great increases as well as some great decreases may be found among them.

BAD WHEELS AND BAD WHEEL-MAKERS.

I.

Tables are apt to be dry reading, but railroad officers who take a proper interest in the quality of what they buy and use will not, we think, find the table below so very dry reading, since it makes a more forcible and authentic exhibit on a large scale of the inequalities which exist in wheels and wheel-makers, and of the length, breadth and depth of the difference between good wheels and bad wheels, than anything heretofore published.

The table has been prepared from a full statement furnished us by one of our leading companies, showing by makers the total number of wheels in

service, the total number removed, and the causes of removal, in detail, under twelve different heads, for each of twenty-four different makers.

We have, for simplicity and convenience, consolidated in the main table the five kinds of "cracks" and the three kinds of "breaks," leaving the other four causes of failure as in the original statement. We present, however, in a separate table, the details of the "cracked" and "broken" failures. In accordance with the wish of those who furnished us the statement, all names are suppressed, and the makers are represented by numbers only, state-prison fashion, which has with some of them a certain appropriateness. As, however, we cannot number in similar fashion the men who buy such wheels, to whom numbers would be still more appropriate, we shall not dwell on that side of the question.

The numbers represent the relative rank as respects quality assigned to the makers. What the precise basis of classification was we are unable to say, although it is plain from the table itself that it rests upon a general comparison of all qualities and not upon any one quality or kind of failure. Very possibly after ranking the first six or eight makers no great pains were taken to graduate very exactly the relative degrees of badness, where all were bad enough.

The table, it will be seen, is not in the original form in which it was received, but has been reduced to percentages, the only form by which ready comparisons can be made. We have indicated, however, with sufficient exactness for all practical purposes, the relative numbers in use, when they were either very great or very small. We have also sub-divided the statement by averages of (1) the six best makers, who furnished about four-fifths of the wheels in use; (2) the six next best makers, who furnished about one-sixth of the wheels, and (3) the twelve worst makers, who furnished only 4½ per cent. of the total in use; yet as even this percentage included some 13,000 wheels, it is a large enough proportion to give a very fair indication of what bad wheels and bad wheel-makers are, as compared with good ones.

In a sense we might now close with the convenient editorial formula that "the table itself is so clear as to need no further explanation," since the summaries at the bottom of it carry a lesson that he who runs may read. In another and more important sense this is hardly true. One most important fact should especially be emphasized, that while the table gives valuable and trustworthy indications of the relative qualities of different makers, it gives an entirely false idea of the absolute qualities of American chilled-car wheels, unless a large allowance is made for the fact that it is modified immensely by the constant annual additions of new stock. This is immediately evident in the total number removed for all causes, which is only 6.21 per cent. of those in service, indicating on its face an average life of sixteen years, which is certainly more than twice the actual average life of wheels on the road in question, and would be much more than twice or even three times the average life in years, except that the average mileage per car per year has recently been very low. The average mileage of first-class car-wheels may be taken, perhaps, at about 50,000 miles, although the entire lot covered by this statement would probably not average over 40,000 miles, if as much. The average per car per year used to be taken quite generally a few years since at 13,000 miles per car, but this has certainly been falling in recent years (although precisely how fast it would be difficult to determine), and the road in question has a particularly small mileage per car per year, not greatly exceeding, if exceeding at all, 6,000 miles per car.

This corresponds to an average life of eight years for car wheels, or to 12½ per cent. per year average renewals, against only 6.21 per cent. actual renewals, a discrepancy of over one-half. The constant additions of new rolling stock which are known to have been made on the road, are the only apparent cause for this effect.

Now when we have such an abnormal proportion of new wheels, it is plain that the proportion of failures from "old age" will be decreased, and hence that the proportion of failures from acute diseases such as cracked and broken will be abnormally increased; since in a large proportion of the wheels these are the only failures which are occurring.

Thus, of only the six leading makers, only one-third (4.39 per cent. out of 12.5) of what must ultimately be the fair average are now failing. Of those which now fail, 14.4 per cent. are cracked or broken, but when the normal average of nearly three times as many renewals has been reached (if the growth of traffic ever stops long enough to allow it to be reached), it is plain that a very much greater proportion of the failures will be for legitimate wear and a very much smaller for sudden failures. The limits of the correc-

tions which should be made for this cause we shall not now attempt to fix, but it is obvious it should be a great one.

We come now to the comparison between different wheel-makers, to which the foregoing remarks do not apply at all or so slightly as to be of little importance, because, whatever may be the effect of the causes advanced to exaggerate one cause of failure and diminish another, they act with substantial equality upon all kinds and qualities of wheels, leaving the comparison unchanged. We must, however, postpone to another issue the deductions which it seems desirable to make, commencing in the meantime the full table, and especially the summaries at the bottom of it, showing the effect of quality upon fractures, sharp flanges, "shelled out," "slid flat," etc., to careful attention. We shall have occasion to refer to both the table and the summary in a following issue.

STATEMENT

Showing Percentages of Wheels Removed in 1884 for Various Causes of Each One of Twenty-four different Makers. (Out of a total of some 300,000 wheels and 18,000 removals.)

CLASS 1.—SIX BEST MAKERS—AGGREGATING 78.2 PER CENT. OF ALL WHEELS IN SERVICE.

MAKERS.	Cracked and broken.		Shelled out.	Sharp flange.	Slid flat.	Worn flat and worn out.	Total.	P. C. removals to No. in service.
	Broken.	Cracked.						
1.....	1.2	7.2	8.4	0.3	4.8	9.6	76.9	3.85
2.....	2.7	6.8	9.5	1.7	1.9	22.9	64.0	3.60
3.....	0.5	14.9	15.4	0.6	1.6	25.9	56.6	7.40
4.....	5.3	10.1	15.4	0.7	4.8	29.7	49.4	3.00
5.....	2.0	23.2	25.2	0.6	2.6	35.0	36.6	2.28
6.....	3.0	20.8	23.8	0.0	1.2	11.3	63.7	8.97
Average.....	2.0	12.2	14.4	0.7	2.7	22.3	60.1	4.39

CLASS 2.—SIX NEXT BEST MAKERS—AGGREGATING 17.2 PER CENT. OF WHEELS IN SERVICE.

7.....	2.4	17.0	19.4	0.0	6.9	20.8	52.9	8.21
8.....	2.5	12.2	14.7	0.1	16.1	20.4	48.7	14.63
9.....	2.8	30.8	33.6	0.1	6.4	21.0	38.9	9.26
10.....	1.5	27.9	29.4	0.1	2.9	18.8	48.8	10.88
11.....	1.3	9.7	11.0	0.3	33.2	33.2	32.3	22.5
12.....	3.1	13.8	16.9	0.0	6.1	40.1	36.9	8.23
Average.....	2.2	23.7	25.9	0.1	8.2	21.1	44.7	10.94

CLASS 3.—TWELVE WORST MAKERS—AGGREGATING ONLY 4.6 PER CENT. OF WHEEL IN SERVICE.

13.....	.9	71.9	72.8	0.0	0.0	22.3	4.9	14.40
14.....	3.4	59.3	62.7	0.0	0.0	23.7	13.6	3.76
15.....	10.4	19.6	30.0	0.3	14.2	11.9	43.6	90.5
16.....	0.0	0.0	0.0	0.0	54.6	45.4	0.0	35.7
17.....	6.3	21.9	28.2	0.0	21.8	9.4	40.6	12.62
18.....	4.9	14.5	19.4	0.0	24.1	17.8	38.7	19.1
19.....	7.9	8.6	16.5	0.0	9.3	14.3	59.9	76.9
20.....	1.6	22.9	24.5	0.0	4.9	15.6	55.0	14.1
21.....	6.0	38.2	42.2	0.5	4.6	17.4	35.3	28.9
22.....	0.2	88.8	90.0	0.0	1.6	7.0	1.4	25.2
23.....	5.8	26.4	32.2	0.0	3.3	49.6	14.9	5.00
24.....	7.5	4.5	12.0	0.0	8.9	44.7	34.4	2.29
Average.....	4.4	37.2	41.6	0.0	12.4	20.3	25.7	20.16

Bold face numbers represent makers having from 20,000 to 50,000 wheels each in service. Starred numbers indicate the smaller makers, viz.: * Less than 1,000 in service; ** Less than 500 in service; *** Less than 300 in service.

Crop Prospects.

That the winter wheat crop will be a small one this year is certain, but the disposition to exaggerate the decrease from last year seems almost universal. The fact is, this country is full of wheat, and almost every soul of us, except those who have sold wheat short, is interested in having the price go up. It would be a good thing for the farmers, for the railroads, and for trade, and so good for trade that almost all workmen would welcome an addition to the cost of their breadstuff (an advance of 20 per cent. would not amount to two cents per person per week), because of the prospect of steadier work. But some people look ahead a little, and fear that we shall have a bad season after harvest if the wheat crop is very light.

But a large part of the decrease was designed, because of the low prices, and will be advantageous for the whole country. There was too much wheat for one year last year, and the only way to get any advantage out of the surplus is to grow something instead of wheat on part of the ground this year. The Department of Agriculture reports a decrease in the acreage sown to winter wheat of "more than 10 per cent." Now this does not mean that all this land is lying idle. Nearly all of it bears some other crops, and almost any other crop will be better than wheat unless the price rises.

But a great deal of wheat was winter-killed, and some of this has been plowed up, and much of the rest promises to give a light yield. Now this is a misfortune. Other crops grow where the wheat was plowed up, but in this case the farmer lost his seed, his fall plowing, and the work of putting in the crop. The aggregate crop product of the country, however, is not lessened thereby, though the wheat production is.

But much wheat not thought poor enough to plow up is likely to yield poorly. The May report of the Department of Agriculture estimated the prospect

then to be for 240,000,000 bushels of winter wheat, against about 370,000,000 bushels last year. About one-third of the decrease is due to a reduced acreage, and something else will be raised in place of it. The remainder, about 87,000,000 bushels, measures the damage. As for spring wheat, probably somewhat less of that than last year has been sown, which decrease will do no harm to any one, for very little of the ground will lie idle. The crop so far has had a fair start, but it is too soon to estimate the yield. It may be greater and it may be less than in any other year. So far there is no reason to apprehend injury to any interest on account of the spring wheat crop.

As for other crops, they too have their future all before them. Corn, the great crop, could not be planted so early as in some years, but much earlier than in some others. It may be the best or the worst crop ever known, for all that has happened yet. There is probably much more of it than ever before, as it has largely taken the place of wheat. Cotton also was not planted so early as is desirable, but it has a fair chance ahead.

Thus, so far, we can see no damage yet done likely to reduce the aggregate crops more than by the value of 87,000,000 bushels of wheat. It is a pity to lose that, but a frosty night about the 1st of September has often done three times as much damage. Certain sections of the country will suffer severely in consequence, doubtless; but for the country at large it is not a matter of great moment. It is, however, an evil which thus early in the season has befallen us, and most of the days for injury to crops are still to come. But then they may grow much better as well as worse before harvest.

The corn movement in the West remains light, as it has been since March. For the six weeks ending May 23, the receipts of the eight Northwestern markets averaged but 1,290,800 bushels a week, while for the 15 weeks previous they had averaged 2,536,000 bushels per week. The large crops of last year should be felt in June and following months if ever. It is true that the movement was exceptionally large in the first three months of the year, but that was true also last year, after a very poor crop, and that did not prevent a large increase after May, and then, as this year, a heavy winter movement was followed by a light movement in April and May. For the last five years the course of the corn receipts at Chicago in successive months has been:

	1880.	1881.	1882.	1883.	1884.
Jan....	4,501,777	2,544,550	4,774,384	4,801,358	6,085,287
Feb....	3,754,232	1,844,498	3,050,089	5,292,234	5,777,918
March...	6,189,180	2,308,769	1,461,007	6,431,816	4,615,663
April....	3,578,137	2,730,046	2,700,352	3,435,694	2,386,788
May....	11,142,763	4,630,240	6,282,484	3,769,330	2,501,373
June....	11.8	1,819	10,929,484	4,450,376	7,201,376
July....	11,972,448	10,895,478	4,448,887	5,664,858	4,350,671
August...	12,434,257	14,543,411	4,456,515	9,452,803	7,880,423
Sept....	11,735,956	12,721,733	4,963,788	11,084,070	7,783,080

Thus last year the receipts were more than twice as great in June as in May, and in the four months from June to September averaged 6,360,000 bushels per month, which is 2½ times the April and May receipts, and this in spite of a crop of 340 millions of bushels less than that now coming forward. So far (to May 23) the total Northwestern corn receipts have been but little more than last year (45.8 millions against 43.5), so that nearly the whole effect of the larger crop remains to be felt. Probably the unusually large winter receipts will prevent the summer receipts from being as large as in 1880 and 1881, when they were for the four months ending with September 47,964,000 and 49,190,000 bushels, respectively, but they ought to be much larger than in any other year since 1881, unless the world has learned to get along without corn during the past three years of poor crops. A heavy corn movement would be of especial benefit to the railroads west of Chicago. It would also give the lines east of Chicago and St. Louis a great deal of traffic, but at current rates little or no profit. A heavy export movement would be generally advantageous to the country, however.

The Master Car-Builders' convention at Old Point Comfort, which begins on Tuesday of next week, will consider three questions which will alone make it one of much practical interest: the adoption of a new standard truck and standard wheel tread, designs for both of which will be submitted, and a general discussion of the car-coupler question, in which railroad commissioners and railroad managers have been invited to take part. In furthering the trial of the dozen or more standards which have been already adopted, the Association has already done a valuable work; but one of the things which would perhaps aid the end in view greatly, and which can easily be done at the convention, has not yet been done, viz., to ascertain approximately how great acceptance each of the existing standards is meeting with. Such knowledge would, on the one hand, tend to lead those who are still hesitating to adopt more quickly standards which are meeting with general favor; while, perhaps, on the other hand, definite knowledge that

certain other of the standards were not meeting with general favor might lead to profitable inquiry into the reasons therefor.

The Chicago shipments fell off still further last week, becoming, with the exception of the first week in January and third week in February, the smallest of the year. Yet they were decidedly larger than is usual at this season of the year, May being, when rates are maintained, usually a month of very light shipments. The shipments of this week ending May 30 this year and in corresponding weeks of previous years have been, in tons:

1880.	1881.	1882.	1883.	1884.	1885.
34,218	47,523	27,124	25,054	52,218	40,399

Thus the shipments this year, though 22% per cent. less than last year, were much more than in any previous year except 1881.

The total shipments and the percentage going by each railroad in each of the last six weeks have been:

Tons	Apr. 25.	May 2.	May 9.	May 16.	May 23.	May 30.
Flour	18,771	17,219	17,041	14,615	9,136	5,980
Grain	34,675	27,430	53,360	43,018	33,691	27,424
Provisions	6,869	7,139	8,099	7,117	7,165	6,995
Total	60,315	51,788	78,500	64,750	49,992	40,399
Per cent.:						
C. & Grand T.	5.9	5.1	4.9	5.9	8.4	9.1
Mich. Cen.	15.6	13.0	25.7	28.6	28.1	22.7
Lake Shore	7.0	9.4	17.6	14.1	13.8	15.3
Nich. Plate	7.3	6.3	7.2	11.6	11.7	11.3
Ft. Wayne	29.5	39.1	21.8	15.6	14.5	15.0
C. St. L. & P.	18.6	14.5	9.2	9.6	6.4	9.8
Balt. & Ohio	8.6	4.4	8.2	11.2	13.2	11.2
Ch. & Atlantic	8.5	17.2	5.4	3.4	3.9	5.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

The decrease in flour shipments is especially remarkable. Seven weeks ago (week to April 18) these were 22,681 tons; last week only a little more than a quarter of that amount. Compared with week before last there was a decrease last week of 34 per cent. in flour, 18% per cent. in grain and 2% per cent. in provisions.

The percentages were less irregular than for some weeks previous, the roads which had been much behind their usual position gaining some, and those which had been much ahead losing. The large share carried by the Baltimore & Ohio is still noticeable, however, as also the small share of the Chicago & Atlantic. The three great roads carried just three-fifths of the flour, the Fort Wayne 22% per cent., the Michigan Central 19%, and the Lake Shore 18 per cent. The three Vanderbilt roads carried 50.8 per cent. of the grain, and the Michigan Central alone 23% per cent. The Fort Wayne carried 32 per cent. of the provisions, and more than twice as much as any other road.

The maximum rate of the week seems to have been 15 cents per 100 lbs. for grain, with some cutting below that. The highest rate for wheat by lake to Buffalo was 1 1/2 cents a bushel, and the lake and canal rate to New York was equivalent to but a trifle more than 6 cents a bushel. Most of the shipments do not go to New York, however, and the railroads would get considerable grain at a much higher rate than they are charging.

The opening of lake navigation has not been followed by large grain shipments. In the week of the opening, when the fleet which had wintered at Chicago, etc., cleared, there were indeed large shipments, 5,840,000 bushels going by lake, while the rail shipments were 2,414,000 bushels, which were nearly the same as for three weeks previous. But in the next two weeks the lake shipments were extraordinarily light, considering last year's crops and the large stock of wheat in elevators, and much less than the rail shipments, which continued about the same as before. Lake and rail shipments in the corresponding two weeks have been, in bushels:

	By lake.	By rail.	Down Miss.	Total.
1885.....	3,211,084	5,101,452	210,003	8,522,539
1884.....	3,644,057	5,100,597	203,119	8,947,773
1883.....	4,151,331	3,243,307	225,641	7,620,279
1882.....	2,454,683	1,945,284	130,791	4,530,758
1881.....	6,359,802	2,794,467	1,173,390	10,327,659
1880.....	7,506,527	2,688,446	.....	10,194,973
1879.....	6,566,278	4,462,585	.....	11,028,863
1878.....	5,199,614	3,823,162	.....	9,022,776

The shipments, it will be seen, were quite similar this year and last, but as the amount of grain is vastly larger this year, this is surprising. Lake rates were lower than last year, but lake shipments were smaller and only 37.8 per cent. of the total shipments, against 40.7 last year and 54.5 in 1883. The rail shipments were larger than ever before, but nearly the same as last year, but the lake shipments were smaller than in any other year of the eight except 1882, when there was little grain in the West to spare. This is the second year that more has gone by rail than by lake, due in both cases to carrying at cost or less.

The exports of hog products continue to be immensely greater than last year, but they are still very much less than in any of the four years from 1878 to 1881, inclusive. For nine successive years the exports for the four months ending with April have been, in millions of pounds:

1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.
282.2	496.1	481.3	471.5	478.8	280.6	364.8	171.9	277.3

Thus the increase over last year was 60 per cent., but over 1883 it was but 5 per cent., and the exports were less than in any of the seven years previous and 42 per cent. less than in 1881 and other years. The increase of the population since 1880 has been sufficient, allowing one pound a week only for consumption, to require about 120 millions of the 194 millions of decrease in exports since that year, but we have not made so much pork as we did then, not having the hogs to make it of, in spite of the large corn crop last year. We may have them next season, and then, with a good corn crop, we shall be prepared to sell a great deal of cheap meat abroad.

The exports of cattle products for the four months have been

slightly greater this year than last, aggregating 93.7 million pounds, against 90.5 million. The aggregate value of all provision exports has been:

1882.	1883.	1884.	1885.
\$36,801,201	\$37,573,196	\$26,922,736	\$32,910,498

The decrease in value since 1882 and 1883 is chiefly due to lower prices of hog products.

The extent to which the block and interlocking systems prevail in Great Britain may be seen by the last Board of Trade report, which shows that 91 per cent. of all the double-track railroad open for passenger traffic at the end of 1884 was worked by the "absolute block" system, against 89 per cent. at the beginning of the year, and of the single-track railroad 4,598 miles out of 7,761, while 110 miles were worked by the "permissive block," 397 by telegraph but not block systems, 367 by a system "in which only one engine in steam is allowed upon line at same time," which certainly comes pretty near to a block system; 2,517 miles by the "train-staff" system, and one by the train porter system.

As for interlocking, there were 35,955 cases where a passenger line was connected with or crossed by another track, nearly two-thirds of these connections being with sidings. Of the whole number, 30,766, or 86 per cent., were protected by interlocking apparatus at the beginning of this year, while a year before but 83 per cent. were so protected.

With the thinner of traffic of this country, it cannot be expected that we shall soon have so large a proportion of our lines provided with these safety appliances, but the use of them must extend until finally it becomes general.

The official report shows that 565 miles of new railroad were opened in Austria in 1884, bringing up the total to 8,153 miles. The longest line opened during the year was 81 miles. Of the whole mileage 3,403 miles are worked by governments, but Austria owns only 2,410 miles of them. Of the whole mileage only 983 miles has a double track, which is but 12 per cent. of the whole, and four companies have 869 miles of it. Austria is a populous and fertile country, but its railroad mileage is less than that of Illinois. Below we compare the area, population and railroad mileage of Austria with that of four of our states:

	Austria.	New York.	Penna.	Ohio.	Illinois.
Area, square miles.....	115,380	47,620	44,935	40,780	56,000
Population.....	22,144,244	5,083,000	4,283,000	3,198,000	3,078,000
Miles of railroad.....	8,153	7,349	7,236	7,217	9,028
Per mile of railroad:					
Inhabitants.....	2,717	692	592	453	341
Square miles.....	14.1	6.5	6.2	5.6	6.2

Thus there is more than twice as much land in Austria per mile of railroad than in any of these four states, nearly four times as many people per mile as in New York, 4 1/2 times as many as in Pennsylvania, six times as many as in Ohio, and eight times as many as in Illinois. Yet the Austrian railroads are not very prosperous, and capitalists are not tempted to extend the system much there, where more new road was built last year than for some time previous.

Record of New Railroad Construction.

Information of the laying of track on new railroads in the current year is given in the present number of the *Railroad Gazette* as follows:

Fremont, Elkhorn & Missouri Valley.—Extended westward 22 miles, to a point seventy miles west of Valentine, Nebraska.

Northern Pacific.—The *Cascade Division* is extended northwest to North Yakima, Wash. Ter., 15 miles.

St. Louis & Emporia.—Extended from Mound City, Kan., west to the Anderson County line, 16 miles.

This is a total of 53 miles, making 599 miles thus far reported for the current year. The new track reported to the corresponding date for 14 years past has been:

	Miles.		Miles.
1885.....	599	1878.....	413
1884.....	610	1877.....	570
1883.....	1,654	1876.....	628
1882.....	3,323	1875.....	296
1881.....	1,574	1874.....	537
1880.....	1,590	1873.....	1,171
1879.....	601	1872.....	1,797

This statement covers *main track only*, second or other additional tracks and sidings not being included.

NEW PUBLICATIONS.

The Civil Engineer's Pocket-Book. By John C. Trautwine. C. E. Twenty-second thousand. Revised, Corrected and Enlarged by John C. Trautwine, Jr., C. E. New York: John Wiley & Sons.

Trautwine's Pocket-Book has begun the usual process of getting bigger, and a dangerous process it is. When a man is writing a pocket-book he admits into it only what he has a positive belief is sound and good. When he is simply revising it, the opposite principle is likely to prevail, and he will exclude only what he has a positive belief is unsound and bad, so that, as all human knowledge is limited, much of what has become with time incongruous, antique and deceptive misinformation is very liable to be left in it, and thus destroy the value of the whole as a trustworthy book of reference. This has happened to many books.

"Trautwine" seems to be passing through this ordeal with rather unusual success, for the present thoroughly revised edition gives every reason to hope that the work of keeping up to date this useful manual has fallen into no unworthy hands. The changes are many and great. The work still remains essentially the same, of course, but the additions and substitutions are so numerous and so well chosen that there is hardly an important topic of the volume which has not

been affected by them and improved. Therefore, we apprehend that most of those who find the first editions useful, will wish to purchase this latest revision also, and will not be disappointed in it.

The principal changes have been as follows: The entire work has been rearranged and reclassified into what the author calls "a rational order," although whether an arrangement really is this which, for example, brings the weights and measures into the middle of the volume, may be questioned. A more rational or certainly more convenient arrangement would probably be to classify the merely tabular and statistical information by itself, with suitable cross-references. The index has been nearly doubled—a needed improvement. The subject of hydraulics and hydrostatics has been largely modified, especially in the practical details of water pipe and hydrants. The tables of strength of materials and the various iron tables have also been thoroughly gone over and new material added or substituted. The treatment of the subject of beams and plate girders has been very greatly improved and that of trusses considerably modified, although the latter seems to us still one of the most imperfect and awkward in the volume. In the attempt to adapt it to the meaneast intelligence, clearness and a sound comprehension of the general principle involved—which is that of moments—is more or less sacrificed. All subjects connected with rock work have been much enlarged, as also on artesian and other well-boring.

The changes and additions are more numerous, perhaps, in the department of "Railroads" than in any other, and the result is good. There are some yawning voids, very naturally, but it is but just to say that no other one publication known to us gives so much or so nearly correct practical information on this topic. The treatment of the subject of turn-outs has been radically modified and greatly improved. It is now almost unexceptionable. The only serious criticism which occurs to us is on the discussion of "turn-outs from curves," on page 787, in which the author (like many others, it must be confessed, who write on this hackneyed subject) does not seem to be aware that if he had said "the length of lead for a given frog is the same on curves as on tangents and the degree of the turn-out curve = degree of main curve + or - (degree of turn-out curve for the given frog on a tangent turn-out)," he has said all that he need to on that subject. "Rail Joints," "Frogs," "Rails," "Ties," "Ballast," "Turn-tables," "Rolling stock" (quite new and good), are treated in the main very well. "Railroad statistics" is good as far as it goes, but it does not go far, and "Trestles" and "Culverts" have still some deficiencies in them, though better than before. As a whole, there is a large amount of useful information for railroad men here not easily accessible elsewhere.

In so vast a collection of disconnected facts and formulae, covering almost the whole field of civil engineering, it is of course inevitable that a formidable list of faults of omission and not a few of commission should exist, if one chooses to hunt them up. We do not care to do this further than mention a few of considerable importance among a number which we have noticed. The chapter on mensuration is imperfect, in that it does not illustrate sufficiently the remarkable range of the prismoidal formula to various irregular solids and their singularly close approximation to the volume of many other solids which may be made by this simple rule, saving long and awkward computations. "Trigonometry" remains unchanged, and, although correct enough, it impresses us as one of the most awkwardly-expressed articles in the volume. "Friction" also needs revision badly. Most of what is given is now antiquated and known to be false. A caution to this effect is given, however, but the newer results are not given. The information in the older tables on "Cost of Earthwork" as to cost of haul is imperfect and liable to mislead. Perhaps a contractor ought to haul earth 2,000 ft. for no more than twice the price asked for a 75 ft. haul; but as a matter of fact he does not and will not. In "Force in Rigid Bodies" the statements that "we cannot assign any number of pounds, tons, etc., of quiet pressure or pull which would produce an effect equal to what we call the force of the blow" is far too decided. In the instance which the author gives of a pile-driver, assuming only that the resistance to penetration follows some uniform law, it is perfectly possible to do precisely that thing, and an explanation of how and why (which we find nowhere in the book) would have added a needed aid to the reader's understanding of dynamics. Finally, in stating (page 763) that "experience has established the superiority of suspended over supported rail joints," the reviser has gone a long way beyond the facts. It may be true, but it certainly is not "established."

Die nordamerikanischen Eisenbahnen in ihren wirtschaftlichen und politischen Beziehungen. Gesammelte Aufsätze von Alfred von der Leyen. Leipzig: Veit & Co. 1885. 8vo, pp. 402. [The Railroads of North America, in their Industrial and Political Relations. A collection of Essays.]

Dr. von der Leyen is a man of recognized ability. He is editor of the *Archiv für Eisenbahnwesen*, an influential journal published under the authority of the Prussian Ministry of Public Works. As early as 1880 his special attention was attracted to the railroad problem as it exists in America. Prepared as he was, by study of this kind, he came to the United States in 1883 to join in Mr. Villard's excursion at the opening of the Northern Pacific Railroad. The results, both of his study and of his personal observation, he embodied in a series of articles published in his journal from time to time. With some additions and changes, these articles are now offered in book-form.

The topics are arranged in somewhat curious order. The headings of the chapters are as follows:

The Railroad Problem in the United States; The Camden &

Amboy Transportation Company; The Northern Pacific Railroad; State Control of Railroads, especially in Massachusetts, New Hampshire, and New York; The New York Elevated Railroads; Passenger Traffic on the United States Railroads; Local Rates on the Railroads of the Northwest; Railroad Wars and Railroad Pools; Grain Rates; The Combined Monopoly of Private Railroad Interests and the Standard Oil Company. Several of them, apparently, have been based on articles published in American periodicals, and indeed it would be almost impossible to make any original investigation of some of these subjects in Germany, or, indeed, do much more than follow the statements given in some one American magazine article, because such an article forms nearly all the attainable literature on the subject.

The book has great merits and great defects, but the merits outweigh the defects, and we can offer the book a cordial welcome. In the first place, it is a strong book, such as only a strong man can write. Secondly, it is thorough, as far as it goes, and indicates care and thought in its preparation. Thirdly, it has special interest, as showing what impression the American railroad system makes upon a man who is friendly to us in his feeling, but whose training and present surroundings place him upon a standpoint widely removed from our own.

The most obvious defect is a lack of unity in the arrangement and purpose of the book. Perhaps it is unfair to blame the author on this account; for he makes no pretense that it is anything more than a collection of essays. Certain parts have little interest for Americans, being written to inform the German public on facts which an American knows as a matter of course. Such is the case with the chapter on American passenger traffic; to a certain extent also with the chapter on grain freights. Some parts are purely historical, like the chapter on the Camden & Amboy Company. Not more than one-quarter of the book is of practical interest in immediate connection with present questions of railroad administration.

A worse defect is the want of comprehensiveness in the author's knowledge. As long as he confines himself to special topics, this evil is not much felt. But when he comes to write of railroad wars and pools, of state control, or of rates in general, he falls into serious errors. The fact that he has read a great deal and knows a great many things, does not protect him from making mistakes which no American would think of making.

For instance, he says (p. 269): "That anything which facilitates the easy passage of through traffic from one road to a connecting road will ultimately be of advantage to the railroads, was for a long time an inconceivable idea to the American lines." He bases this remarkable statement on a passage in Mr. Fink's testimony before the Senate Committee in 1883. Of the limitations with which any intelligent American would take Mr. Fink's statement, Dr. v. d. Leyen has no idea at all.

In his investigation of the local rates of American railroads, he takes as a type none other than the Northern Pacific! Under these circumstances he has no difficulty in making out comparative results which are extremely favorable to Prussia. The article in its present form is open to much less objection than in the form in which it at first appeared in the *Archiv*. There it was entitled, "North American Railroad Conditions [Eisenbahn-Verhältnisse];" now this is modified to "Local Rates of American Railroads in the Northwest." But the fundamental error is in pretending that the Northern Pacific is in any sense a fair average type in this respect, and in undertaking to compare the rates of a road through a country which is hardly settled at all with the rates in a thickly settled country like Prussia.

The title of the chapter on State Railroad Commissions, reads curiously, "especially in Massachusetts, New Hampshire and New York." Massachusetts and New York are all very well—but New Hampshire! We suspect it was because the author had a copy of the New Hampshire law at hand, and not those of any other states of greater importance in the railroad world. This chapter is in several respects the most unsatisfactory in the book. In the first place it is based on quite insufficient knowledge of the subject. He believes that the granger type of commission still prevails throughout the upper Mississippi Valley, and simply does not dare to use its legal powers. Of the remarkable history and work of the Iowa Commission he has not the faintest notion—apparently he is not aware of the existence of such a body. He is silent alike on the energetic success of the Commissions in Georgia and the neighboring states, and the energetic failure of a similar commission in California. What he says of Massachusetts and New York is most of it true enough; only it has already been said too often to be of first-rate interest in America.

True enough for the most part, we say. There is one respect in which no man with Dr. v. d. Leyen's training and surroundings will ever be able to understand the tendencies of American political life or of American institutions. The restraining force of public opinion, as such, apart from any particular law or authority in which it is embodied, is something which a European finds it hard to understand. Because monopoly is making such vast progress, and because there is so little actual restraint by law, he thinks that our political institutions are in danger of being overthrown. Were such events to take place in Europe, he would be justified in his conclusions. In America he is almost entirely at fault. He is like a man coming from a well-drilled and submissive family of boys to a less restrained and more lawless one. He mistakes a great many things for moral depravity which are simply incidents of vigorous growth, and which will pass away of themselves as years go by. The very absence of any exercise of parental discipline hour by hour may be a sign of reserved strength rather than of weakness.

TRADE CATALOGUE.

The *Contractors' Plant Manufacturing Co.*, of Buffalo, N. Y., has issued a new illustrated catalogue showing the various manufactures of plant for contractors' uses, including steam, horse and hand-power hoisting machinery, whims, derricks, steam and hand cranes, plows, tackle blocks, and other contractors' supplies in great variety.

Summer excursion books form quite an important part of railroad literature about this season, and quite a number of them are so carefully prepared and handsomely published as to be worth preservation when the transient use for which they are intended has passed.

Spirit Lake and its Attractions, issued by the Passenger Department of the Burlington, Cedar Rapids & Northern road, is a lively and neatly illustrated guide to Spirit Lake, Okoboji Lake, and a picturesque region in Northern Iowa which has not been until recently accessible by rail, and has not been as well known to tourists as it deserves.

The Summer Tourists' Wonderland, issued by the Chicago, Milwaukee & St. Paul Co., contains maps, a brief general description and directions for reaching the many points of attraction on this company's lines in Wisconsin, Iowa, Minnesota and Dakota. It has also a list of hotels and boarding houses at the principal points of resort, with their capacity and prices, which is very convenient for the tourist.

The Eureka Springs of Arkansas, from the St. Louis & San Francisco Co., is a description of the country about the Eureka Springs and an account of the healing powers claimed for them, giving a glimpse into a region little known except in the Southwest.

Summer Homes in Piedmont Virginia, is a concise and useful guide to the picturesque region reached by the Virginia Midland road, a country attractive in itself, and now possessing the additional interest of historical association, studded as it is with the battle-fields of the late war. The simple time-table of the road reads almost like an epitome of the history of the armies of the Potomac and Northern Virginia, and it is difficult, at least to one who was there 24 years ago, to believe that the quiet country villages which the book describes are the same places, and that the summer resorts of to-day are really the battle-fields of a few years ago. The book includes a guide to several of the famous Virginia springs.

Railroad Property in Missouri.

The Railroad Commissioners of the state have returned to the state board of equalization an estimate of the value of the railroad property in Missouri, which makes it \$103,528,555.

This is nearly three times the assessed value (\$38,380,316) as returned for taxation; and no doubt, it will be complained that this important item in the state's wealth has been habitually undervalued, and the roads permitted to escape without paying their share of the state's revenue. The Railroad Commissioners arrive at this estimate of \$103,528,555 by a very simple process. They assume that the cash value of a property is that amount on which it pays a good interest; and they find that the gross earnings of the roads last year were \$30,123,399, and their expenditures \$20,042,984, leaving as their net earnings \$10,080,414. This is 10 per cent. on \$103,528,555, and therefore the cash value of the roads is \$103,528,555, or about \$22,000 a mile for the 4,679 miles of road in the state.

On their present assessed valuation (\$38,380,316), the roads pay in revenue to the state, the counties and the schools about \$570,000 a year; on the valuation estimated by the commissioners they would pay about \$1,545,000. The difference is \$975,000.

It would appear, then, that the railroad property in the state is, and has been, undervalued, and that it is paying nearly \$1,000,000 less in revenue to the state, counties and schools than it ought to. But there is this fact to be remembered: That nearly all taxable property is similarly undervalued. In the counties it is the rule with assessors to assess farms, crops, live stock and other property at about two-thirds their actual value. This makes the taxable wealth of the state, exclusive of railroads, telegraph lines and bridges, \$680,000,000. If this mass of property was assessed at its full value the return would be over \$900,000,000, and the proposed cash valuation of the roads added to this would give the aggregate taxable wealth of the state at over \$1,000,000,000.

Telegraph property in the state is assessed at \$518,000; but if it were valued on a 10 per cent. basis, the valuation would, probably, be three times as great.

There has always been difficulty in adjusting valuations between property which yields a specific income or dividend, like bank and other stock, and property which does not yield a fixed income, and sometimes does not yield any income at all—such as farms, lands, town lots, furniture, jewelry, plate and live stock. It has been the rule to assess this mass of indeterminate property, which constitutes the chief wealth of the state, at about two-thirds or three-fourths its actual value, and the railroads have heretofore shared in the benefit of this rule. A change which would make them taxable on their full cash value would nearly treble their taxes and be regarded as a hardship and comparative injustice.—*St. Louis Republican*.

THE SCRAP HEAP.

Drunk on the Track.

A drunken man, the other side of Newburg, on Saturday evening, staggered against the Ulster County express on the West Shore road, the train moving swiftly, and was struck by the step of one of the cars, thrown violently to the ground, breaking his hip, and it was a great wonder he was not killed. Engineers on that road have more trouble with drunken men than anything else. They find them asleep between the tracks, sometimes rolled so close to the rail that the chances are very slight of their escaping decapitation. It is never pleasant for an engineer to kill a man with his train, even though he is not to blame. The vagaries of drunken men seem to tend toward risking their lives on a railroad track.—*Port Jervis Gazette*.

Estimating the Speed of the Train.

"There is nothing more deceptive than the speed of trains," remarked a Lake Shore conductor the other day, as he dropped into a seat with an acquaintance, a few miles west of Bryan. "Every once in a while—well I might say every day or two—some fellow tackles me on the slow rate of speed

made by our trains. Especially does this occur on No. 4, 'Great Scott!' some chap will remark, 'I thought you called this a fast train! Why, the western roads I just left beat this all hollow!' Now I generally get the fellow quieted by making him count telegraph poles and he soon finds that he has made a great mistake in trying to reckon speed by the clatter and swaying of the cars. Just try it now. We are going down Bryan grade—35 poles to the mile. Thirty in the minute, you say? Well, that's about 52 miles an hour, and you look around the car and see if you can find a passenger who seems to think he is making over 25 an hour. And now stand out here in the aisle and look through the train and see how much swaying you can find. Fact of the matter is the track is smooth and well surfaced, so that the train moves along without the least fuss, but the average traveler cannot get the idea out of his head that the rattling of bolts and joints is the only indication of big speed."—*Buffalo Commercial Advertiser*.

A Woman in the Field.

Railroad superintendents and master car-builders may well tremble. They have in most cases by long experience acquired the art of disposing of a car-coupler inventor, but a new danger is now impending over them. The bulletin of the Patent Office announces that a patent for a car-coupler has been granted to Betsy A. Maxey, of Knoxville, Ill., and all the persuasive powers which a woman knows so well to exercise will doubtless be brought to bear upon them. They may as well give up at once, and prepare to adopt the Betsy car-coupler.

A Railroad Semi-Centennial.

The fiftieth anniversary of the first running of a train on the Boston & Lowell road passed without special notice last week. The first track on the road was laid near Lowell, Mass., in 1835, and the first train was run over that track on May 28 in that year. The cars used were built in Lowell, and the locomotive, called the "Stephenson," was imported from England and was carried from Boston to Lowell on the old Middlesex Canal, long since abandoned.

Damages for Killing a Man Who Was Not Dead.

In October, 1884, Mrs. Martha Thornburg, of Bucklin, Mo., began suit against the Chicago, Burlington & Kansas City Co. to recover damages for the death of her husband, who she claimed had been killed some three months before in the accident at Grand River, where a construction train on the road broke through a temporary bridge and a number of men were killed and injured. The railroad officers were at first inclined to compromise the suit, but several things about it excited their suspicion, and further inquiry showed that on the day of the accident Thornburg was working at a point some 15 miles distant from the place where the accident occurred. The case was then put in the hands of a lawyer, who, after hunting for several months, finally found the man some two weeks ago in Olathe, Kan., where he was living under an assumed name. The man returned with the lawyer to Missouri, where he was identified and made the necessary affidavits, and the case was dismissed. He had not been living with his wife for some time before the suit was brought, and it does not appear whether he was connected with the attempted fraud or whether it was the woman's idea alone.

A Crazy Passenger.

Shortly after a passenger train on the Wabash, St. Louis & Pacific road left Kansas City for Chicago on the night of May 30 an insane man took possession of the chair car. He was armed with a revolver and knife, and very soon had the car entirely to himself, the trainmen being quite unable to do anything with him. Dispatches were sent to several stations on the line, but at all those points he succeeded in preventing the police from entering the car. Finally a dispatch was sent to Chicago, and on the arrival of the train at that place it was met by a dozen officers. The lunatic was ready for them, standing on the platform of the car, and before it had stopped a shot from his revolver wounded one of the officers fatally. The policemen believing that it was impossible to take him alive, opened fire, and a moment afterward he rushed out of the car upon the platform, fired a couple of shots into the crowd, fortunately without effect, and ran down the street. He was finally secured after a hand-to-hand fight in which he beat one of the policemen terribly over the head with his empty revolver. When finally secured he was found to be badly wounded, several shots having passed through his body. He was sufficiently rational to give his name as Louis Reaume, and to say that he was on the way from Denver to his home in Detroit, but could not give any reason for his conduct. The trainmen and passengers will long remember their exciting trip. Some of the police thought that his insanity was simply a case of Kansas City whisky. At latest accounts he was recovering.

Not Dynamite.

The shore line New York express train rolled into the Providence station in this city on time yesterday afternoon, attached to it being the well-filled baggage car in which the genial George Colby reigned supreme master of ceremonies. George proceeded to wrestle with the trunks, chests and boxes that were piled to the roof of his domain. Grasping a stout-looking heavy chest by the rope becket he proceeded with the grace of a base-ball pitcher under the new rules to demonstrate the relative qualities of the strength of the chest and the floor of the car. A loud explosion occurred, and in the twinkling of an eye the heroic baggage-smasher was enveloped in a cloud of varied-colored smoke and surrounded by boots, shoes, clothing and sundry articles of wearing apparel that had been in the trunk. The noise of the explosion and the sudden exit of Mr. Colby from the car—his form being but dimly visible through the cloud of smoke that encircled him—created considerable excitement about that section of the depot, and visions of O'Rossa and his coterie of dynamiters flashed through the minds of railroad officials, police and citizens, who were gathered to the scene. After the scare was over, an investigation of the premises revealed the fact that the dismantled chest belonged to a seafaring man, and among its contents were some signal rockets that were intended to be exploded by concussion. The sudden fall of the trunk had produced the necessary impetus to awaken the slumbering powers of the explosives, and off shot the rockets, with the above-named result.—*Boston Herald, May 30*.

The Accident at Somerset Junction.

The Massachusetts Railroad Commissioners, after having made a full investigation into the recent collision of two passenger trains on the Old Colony Railroad at Somerset Junction, have rendered the following decision thereon: "This accident was investigated on May 29, and the place was visited on the next day, not because its results were serious, but because a head collision between two passenger trains demands examination without regard to its results.

"Train 91 from Boston to Newport is due at Somerset Junction at 5:20 p. m. Train 152 from Fall River to Middleboro is due at 5:18. A positive signal is required before either can pass. One ball hoisted on the mast admits the downward train (91); two balls admit the upward (152).

"If no ball is hoisted, both come to a stand. The trains are each visible to the signalman at the distance of a mile. He sets the switch as well as the signal. On this occasion

No. 152 was two minutes late, and No. 91 arriving first, properly received the signal to come on and obeyed it; and the switch was set for that train. The engineer of No. 152 neglected to observe the signal until he found that the switch was set for the other train, when he used all possible means to stop, but in vain. Every means was taken to check No. 91 also, but a collision could not be prevented. Fortunately no one was killed and no passenger was injured. Three of the train hands who were somewhat bruised and cut are all doing well. The damage to the cars and engines amounts to \$4,000.

"No one is in any way censurable except the engineer of No. 152, whose unaccountable neglect to observe the signal is the sole cause of the accident. He has been in the service of the road for 30 years; has never had any trouble before, and is remarkable for his fidelity and good conduct. Indeed, the General Manager states that if he had been called upon to name the first among his engineers he should have named this man. Probably his attention was distracted by the fact that his engine was not the one he had used heretofore. After he discovered his error he did all that could be done, and he remained on his engine after the collision. The managers of the road have long been engaged in a general plan of double-tracking, which includes this spot, and which will soon be completed."

Long Terms of Service.

The South Carolina Railroad, which is one of the oldest roads in the country, has had only three Master Mechanics since the first appointment was made to that office, 55 years ago. The first was Mr. Darrell, who held the position for 40 years, and was succeeded by Mr. W. Bell Smith, who served 10 years, and was followed by Mr. P. J. Cochrane, who is now in office.

Killed by Lightning on the Track.

A dispatch from Chattanooga, Tenn., May 30, says: "Tom Malony, a well-known railroad man, was struck by lightning and instantly killed in this city to-day under peculiar circumstances. A sudden shower of rain came up, and he started across a railroad yard to seek shelter. He was running along a track laid with steel rails, when a blinding flash of lightning lit the heavens. The electric fluid passed along the steel rail and entered his body at the heel, passing entirely through his frame. He fell dead instantaneously. His shoe was slit and the crown of his hat cut from the brim, but no marks whatever left on his body."

Musical Train Robbers.

A dispatch from San Francisco, May 27, says: "The Theodore Thomas concert troupe, which arrived here this afternoon, report that their special train was boarded at Coolidge, N. M., by a herd of cowboys, who, with drawn revolvers, made the musicians play and Mme. Materna sing. The musicians began playing 'Home, Sweet Home,' but the cowboys yelled for 'The Arkansas Traveller.' Mr. Thomas gave orders to give them what they wanted. Mme. Materna complained of a headache, but the cowboys would not take no for an answer. Just as she was beginning to comply with their request, the engine whistled and the cowboys jumped from the cars, firing a volley as the train moved off."

Fast Time.

The limited express over the Chicago, St. Louis & Pittsburgh road, on Sunday morning was hauled from Columbus, O., to Indianapolis, 183 miles, in 4 hours and 10 minutes, stops and slowing up in city limits to be deducted from that time. The 84 miles from Columbus to Bradford was made in 107 minutes; time taken for eight stops at stations and railroad crossings to be deducted.—*St. Louis Republican*, May 29.

Found One.

He stood in the door of a passenger coach about to leave the Central depot the other day, and called out in a loud voice:

"Is there a railroad hog on this car?"

Many turned to look at him, but no one replied.

"Because if there isn't I will take the other coach," continued the man with a bar of iron in his tones.

"Oh, well, nobody wants to drive you out," replied a man in the centre of the car; "if that's all you are looking for, here goes to accommodate you."

And he turned the next seat over, put his baggage on it, and got himself in shape to occupy two seats without an inch of room to spare.—*Detroit Free Press*.

The Oldest Locomotive Engineer.

A correspondent of the *Locomotive Engineers' Monthly Journal*, writing from the South Carolina Railway, says: "Mr. Henry Roworth, or 'Uncle Henry,' as he is commonly called by the boys, is the oldest engineer in the United States now in actual service. He was apprenticed in Charleston, and has been in the company's service ever since. Mr. Roworth has been running engines for the past 50 years. He is 75 years of age. He now runs No. 20 on Aiken Hill, where he has been for the past 35 years. He is in excellent health, and as jovial and jolly as a young man, and when he couples No. 20 on for a double-header up the hill, one would hardly imagine there was an Aiken Hill by the speed of the train. Uncle Henry remembers all the ancient locomotives, with their lives and histories. It is a saying with him and some others here that they are made of iron and will last long after we are in our graves; but this old saying will not apply, for Engine 17, the 'Thomas Rogers,' has just been stripped and cut up, and nothing is now left of her. She was the only engine Mr. Rogers ever attached his name to, and was built for the South Carolina Railroad, in 1854, to run tests against the Baldwin and Norris machines."

A Pass Swindler.

A man, calling himself Charles Riford, called yesterday at the office of the General Manager of the Chicago & Northwestern Railway and presented a letter which he claimed was signed by Payson Tucker, Vice-President and General Manager of the Maine Central Railroad, asking for a pass from Chicago to Council Bluffs and return for Charles Riford. To make sure that the letter was all right a telegram was sent to Mr. Tucker at Portland, Me., asking about it. He replied that he never wrote or signed the letter; that it was a forgery, and that the man who presented it was undoubtedly a fraud, and that the same game had been tried before over what purported to be his signature.

The same party also called on the Louisville, New Albany & Chicago road with a forged letter from C. E. Ray, Assistant General Manager of the Maine Central, asking for a pass to Indianapolis and return. The fraud was detected, and the letters sent to Mr. Ray at Portland for investigation.—*Chicago Inter-Ocean*, May 29.

The Fate of an English Car in America.

Twenty years ago, before drawing-room cars were introduced, an English compartment coach, elegantly decorated for those days, was built and run for a time on the steamboat train between Boston and Stonington. But it was never very popular. Americans do not care for that privacy which so many Englishmen insist upon, and they decidedly object to being locked up in a compartment, either alone or in company with one or two others who may be strangers. And so this palace car of those days was soon taken off and was forgotten. But all these years it has been stored away somewhere by the Stonington Railroad, and at last it has been brought out, taken to Oakland Beach and converted into a café.

TECHNICAL.

Locomotive Building.

H. K. Porter & Co., in Pittsburgh, have received an order for several light locomotives for the Panama Canal Co. They are to be similar to others already furnished to that company and are to be used for construction purposes.

The Manchester Locomotive Works in Manchester, N. H., last week delivered a new passenger engine to the Montpelier & Wells River road.

The New York, New Haven & Hartford shops in Hartford, Conn., recently completed a new passenger locomotive with 17 by 22 in. cylinders and 68 in. driving wheels; the boiler is 51½ in. diameter of barrel, and is of steel.

The Baldwin Locomotive Works in Philadelphia last week delivered a narrow-gauge engine to the Marietta & North Georgia road.

The Old Colony Railroad shops in South Boston have begun to build 3 new locomotives for the road.

The South Carolina Railway shops in Charleston have just completed a new ten-wheel freight locomotive for the road.

The Car Shops.

The Old Colony Railroad shops in South Boston are building a parlor car and 3 passenger cars for the road. The passenger cars are 60 ft. long and seat 64 passengers. These shops have recently completed 27 box cars 33 ft. long, and have begun to build 25 more.

The Sheffield Velocipede Car Co., at Three Rivers, Mich., is now busy on an order for 50 hand-cars to go to Australia, and 30 more to go to New Zealand. The company reports a number of orders on hand and business very good.

Bridge Notes.

The Union Bridge Co., of New York, is now at work on the bridge over the Arkansas River at Van Buren, Ark., for the St. Louis & San Francisco road. The company has also taken a contract to build an iron bridge over the Arkansas at Tulsa, Indian Territory, on the Central Division of the Atlantic & Pacific road. This bridge will be 1,394 ft. in length over all and will be raised on stone piers.

The Keystone Bridge Co., in Pittsburg, has just completed an iron railroad bridge to go to Brazil.

The Missouri Valley Bridge & Iron Works at Leavenworth, Kan., have taken a contract for an iron bridge at Turley's Ferry, Mo., over the Lamoine River.

The King Iron Bridge & Manufacturing Co. has the contract for an iron bridge, 180 ft. span, at Rankin's Mill, Mo., over the Petite Saline River.

Iron and Steel.

The Manufacturers' Committee having failed to agree with the Amalgamated Association on the proposed new scale of wages, there was on June 1 a very general stoppage of work in the iron mills in the Pittsburgh and Wheeling districts. Very few manufacturers have accepted the new scale, the great majority saying that it is impossible to do so in the present condition of the market. At Cincinnati and other western points the mills are generally waiting for the result at Pittsburgh, and will be governed by the final action taken there. Matters are very quiet, and there seems to be no ill feeling.

The Moran Bolt & Nut Co. in St. Louis has recently received a large number of orders from railroad companies and others, and is now running its works full time.

The new rolling mill at Burlington, Ia., has commenced operations. It has a capacity of 10 tons per day and will for the present run on merchant bar.

The repairs of the blast furnace at Fond du Lac, Wis., are completed, and the furnace will go into blast at once. It uses charcoal as fuel.

Mount Hope furnace in Lancaster County, Pa., has been sold by the estate of A. B. Grubb, to Clement Grubb, of Lancaster, for \$300,000. The sale includes 250 acres of land and the right to take ore from the Cornwall bank.

The York Iron Co. is a new corporation which purposes building a charcoal blast furnace at Black River Falls, Wis., adjoining large deposits of iron ore.

Manufacturing and Business.

The Standard Car Heating & Ventilating Co., of Pittsburg, has recently sold a large number of its heaters, which are now in use on the Pennsylvania Railroad, the Chicago, Burlington & Quincy, the New York Central, the West Shore, the New York, New Haven & Hartford, the Buffalo, New York & Philadelphia, the Fitchburg, the Providence & Worcester and many other lines. These heaters have been placed in the new parlor cars recently built by the Pennsylvania Railroad.

The firm of M. A. Hanna has succeeded to the business of Rhodes & Co., of Cleveland, O., dealers in coal, iron ore and pig iron. The new firm is composed of M. A. Hanna, L. C. Hanna and A. C. Saunders.

The Rail Market.

Steel Rails.—The demand just now is moderate, but quite a number of small orders have been placed; current quotations being \$27@28 per ton at mill for ordinary sections and \$31@32 for light rails. It is said that large buyers are holding off in hopes of securing lower prices, but the mills do not seem to be disposed to give way.

Rail Fastenings.—Business is still very dull and quotations continue nominally at 1.90 cents for spikes in Pittsburg; 2.40@2.80 for track-bolts and 1.60@1.70 for splice-bars.

Old Rails.—The market for old iron rails is more active, with quite a demand for small lots and very few in stock. Quotations are from \$17@18 per ton at tidewater. Old steel rails are quoted at \$16@17 per ton in Pittsburg.

Awards at the New Orleans Exposition.

It has probably appeared singular to our readers that the large exhibit of railroad wheels made at New Orleans by A. Whitney & Sons, of Philadelphia, was not included in the list of those which received awards. The reason for this was that the wheels exhibited by this firm were entered as "not for competition," under the rules given exhibitors to make such entry. Messrs. Whitney & Sons took this course at New Orleans, as at the Chicago Exhibition in 1883, believing that the only real valuable comparison of railroad wheels is by their use, a test which is not practicable at an exhibition.

An English Car Wheel Shop.

The Patent Shaft & Axletree Co., of Wednesbury, England, in its last fiscal year turned out 24,625 pairs of wheels fitted to axles, and 6,137 single wheels in addition, making a total of 24,625 axles and 55,387 wheels. Besides the wheels and axles sold to English roads, a large number were sent to India, Australia and South America, and orders were received from railroads in the United States, Canada, South Africa and Japan. The extent to which the company's wheels are used on some English lines is shown by the fact that the Midland Co. took 7,000 wheels and the Great Western 3,000 pairs; 4,893 pairs were furnished to the Indian state lines.

In the company's mills 35,002 tons of iron and 12,752 tons of steel were made, and 6,400 tons of steel were bought from other parties. The company does not confine its work to wheels and axles, but last year turned out a large quantity of bridge work, its chief contracts having been for the great steel bridge over the Ganges at Benares, India, 3,518 ft.

long, in 16 spans, and for the iron work of the Brighton station on the London, Brighton & South Coast road. The total output of finished iron and steel was about 1,000 tons per week.

During the last 10 years over 50,000 pairs of wheels and axles have been sent to railroads in India alone. The company is now introducing its wheels in this country, where its interests are in able hands.

Running a Locomotive in 5 ft. of Water.

The New York *Daily Graphic* recently published an illustration showing a train on the Little Rock, Mississippi River & Texas road running through water nearly up to the top of the driving wheels of the locomotive. It seemed hardly a possible thing, and several letters were received expressing doubts as to whether the illustration represented an actual occurrence. In order to satisfy the doubters, who could not believe that steam could be kept up with water several feet over the fire, the *Graphic* now publishes the following letter from Mr. H. Wood, General Manager of the road, showing how it was actually done:

"On the morning of May 4 the passenger train left Arkansas City with an excursion of about 250 people, and consisted of a baggage car, four passenger coaches and a flat car, drawn by a passenger engine of the ordinary type, having cylinders 16 by 24 in., with 5 ft. drivers, and encountered the flood about 35 miles east of Arkansas City, which covered the track for a distance of about 8 miles. For 5 miles of this distance the water was about 4½ ft. deep, but for a considerable distance it was 5 ft., just covering the tops of the driving wheels. Two cars were left in the water, but the engine drew the balance of the train through and brought it out on the other side.

"The fire was made by filling the lower part of the fire-box with cord wood, then piling about a ton of coal in lumps on top of it, to make a foundation for the fire. On top of this a fire was built of wood finely split. The height of the water left about 1½ ft. clear space between the water and the crown-sheet of the fire-box, leaving a few rows of flues uncovered for draft. The steam on the engine was run up to about 135 pounds pressure, and the train ran each time about 2,000 ft., which reduced the pressure to about 60 pounds. After about 20 minutes delay, the steam was again run up to the maximum pressure, and the train again went forward till it was reduced as before, thus requiring the train to be started about 15 or 20 times, taking about half an hour each time.

"The Master Mechanic of the road, Mr. F. Hufsmith, was on the engine, and personally directed the work, and is entitled to the credit for its successful performance. There is no difficulty with an engine properly fitted up for the purpose to run through even deeper water, so long as the track remains in its proper place. In this instance it was back water, without current, and there was no danger from disarrangement of the track."

American Society of Mechanical Engineers.

A meeting of the American Society of Mechanical Engineers began at Atlantic City, N. J., May 27. At the morning session the usual routine business was transacted and reports of various committees submitted. A proposition to have the Society establish a standard method of testing steam boilers was laid on the table.

At the afternoon session papers were read on the Steam Stamp, by T. C. Coggin; Belts as Grain Conveyors, by T. W. Hugo; Early Experience in the Flow of Metals, by W. E. Ward. All these papers were discussed by the members present.

In the evening a general reception was held in Bartlett Hall, which was largely attended.

At the second day's session papers were read on Shell and Water Tube Boilers, by Allen Sterling, of New York; Technical Training at Worcester Institute, by G. F. Alden, of Worcester, Mass.; and the Torsion Balance, by William Kent, of New York. The last-named paper called out a long discussion, which was participated in by a number of the members.

American Institute of Mining Engineers.

The meeting of the Institute at Chattanooga, Tenn., May 19-22, was largely attended and was very successful. On the first day the usual addresses of welcome were made, and President Bayles delivered his annual address. A number of valuable papers were read and discussed, and the meeting was pleasantly varied by excursions to points of interest to the members. There was a very pleasant reception at the Stanton House on one evening. After the meeting a number of the members started on a visit to the mines and furnaces of North Alabama.

Proportion of Load to Weight of Trains.

The annual report of the Charlotte, Columbia & Augusta Co. gives the following figures for the respective weights of trains and their loads:

	Passenger.	Freight.
Engine mileage.....	202,042	219,482
Car mileage.....	801,610	3,147,556
Mile-tons by engines.....	8,081,880	10,315,654
Mile-tons by cars.....	18,072,742	30,851,628
Loads in mile-tons.....	760,602	14,851,698
Total mile-tons, trains and loads..	26,915,024	56,018,980
Proportion of loads to total.....	2.83 per ct.	26.51 per ct.

The average speed of passenger trains is given at 24 miles and of freight trains at 14 miles per hour. The average passenger train was 4.46 cars; the average freight train 14.94 cars. The road is one of comparatively light traffic, and the weight of freight trains is necessarily limited, the heaviest freight engine on the road having only 15 by 22 in. cylinders.

Improvement in Rolling Rails.

An improvement in rolling mills, relating more particularly to the mechanism for handling, sawing and curving rails after they have been rolled, has been patented by D. H. Lentz, of Indianapolis, Ind. When a rail comes down the way from the forming rolls the operator turns a lever to drive the carrier rolls and bring the rail to the point desired. When the rail is in proper position the motion of the carrier rolls is stopped, and the mechanism which drives the saws and the rail curvers is put into operation by depressing a treadle. After the rails are sawed and curved the operation of this mechanism is stopped and another set of rail carriers is put into motion by a hand-lever to carry the rail on to the hot-bed. By reversing this lever the rail carriers are brought back to their first position. While a rail is shoved over those on the hot-bed it is raised nearly clear of them, and is thus protected from abrasion.—*Iron Age*.

A Ditching Car.

The Plattsmouth, Neb., *Journal* says: "A new design has just been put up at the Burlington & Missouri River shops, under the direction of Master Mechanic Hawksworth, for ditching purposes along the sides of the railroad track. An ordinary platform car is supplied with a massive frame reaching out several feet on each side, from which are suspended four ponderous scoops or buckets, and opposite each corner of the car. These scoops are made in the shape of the ordinary sugar scoop used by the grocer, but are constructed of boiler iron, and are large enough to scoop up a cubic yard of earth each. These are so attached that they will dig into the ground and remove a cubic yard of earth each, and can then be raised, lowered or up-ended to allow the contents to

fall out, and all by means of compressed air from the engine, operated by a couple of air cocks on the car. The power of the machine was tested a few days since. Between 3,000 and 4,000 pounds of scrap iron was put into one of the scoops, and was raised from the floor without difficulty and dumped. The design of the car, with the exception of the method of supplying the power, was taken from the Chicago, Burlington & Quincy, and Mr. Hawksworth conceived the idea of furnishing it with power by means of air. The car will be taken out for a trial soon.

An Accident at a Grade Crossing that was Prevented.

What would probably have been a serious crossing collision from a singular cause, or combination of causes, was averted at the Valparaiso crossing of the Fort Wayne and the Chicago & Grand Trunk roads, May 23, by the pneumatic interlocking apparatus at that point. It appears that a freight train on the Fort Wayne road, eastward bound, broke in two west of the Grand Trunk crossing, the rear portion being finally brought to a stand-still west of the derailling points connected with the crossing signal. In the mean time the engineer put on steam and pulled the 20 cars remaining with the engine rapidly out of the way of the rear portion which was then following. But after he had passed the crossing and the derailling point east of it, (going up grade) these 20 cars broke loose from his engine and started to go back to the crossing, the grade being a steep one and the brakemen being unable to hold them.

After the front portion of the train had passed the crossing the operator in the tower, thinking that the whole train had passed over, gave a Grand Trunk passenger train the right of way, and in so doing, of course, took away the track from the Fort Wayne train in both directions by opening the derailling points. The result was that the 20 cars, instead of colliding with the Grand Trunk train went off at the derailling points. This combination of circumstances is believed to be without a parallel. It only remains to add that no one was injured and only 6 loaded cars were thrown off at the derail, and none of the contents, and not even the running gear, were in the slightest degree damaged.

This was a striking instance of the necessity of protecting grade crossings by proper appliances, as in this case no care exercised by signal men could have prevented a collision, as the derailling points connected with the signal apparatus did.

The Westinghouse Automatic Brake on Freight Trains.

The Old Colony Railroad Co. has decided to apply the Westinghouse automatic air brake to 25 new cars they have recently built at their shops in Boston. This train will be used for running fast freight between Boston and the New York steamboat connection. By this move the Old Colony becomes the first railroad company in New England to adopt a continuous brake on freight car equipment.

Mr. Westinghouse designed the method of applying the brake to these cars. The brake rigging will be carried by the truck transom, so the shoes will be applied between the wheels. The shoes are fastened to a trussed iron beam. If the brake works satisfactorily in the severe service of fast freight trains, it is expected the Old Colony will soon have other trains equipped in the same way. —National Car-Builder.

New Street Car Motors.

Compressed air, the cable system and electricity are having a close race just now as substitutes for horse power in propelling street cars. Traction roads in Philadelphia and electric and compressed air motors in neighboring cities are all about to be given fair trials. The traction system is already in practical use in San Francisco and Chicago, electricity is employed to some extent in Europe and in one or two places in America, and compressed air motors have been commercially used in some French cities for several years. But none of these systems have been given such systematic trial as we are now promised. Each has its peculiar advantages and each has pronounced disadvantages apart from questions of cost. Both the electric and cable roads require separate constructions for the conveyance of power along the whole route, and the compressed air motors are liable to give out before completing their journey, thus rendering them not merely useless, but actual obstructions to travel. How far this can be overcome by the use of auxiliary reservoirs without increasing the cost too much, remains to be seen. —Philadelphia Ledger.

Technical Schools.

The mechanical engineers, in session at Atlantic City, have been discussing technical schools. Some of them think that the tendency of such schools is to make engineers rather than mechanics, and that it would be better to keep the pupils more strictly to mechanical work. There is no doubt about this tendency. The ambition of the teachers to make a great show of results inclines them to the extravagant use of power tools and to an extension of the course of study until it embraces all the text books in the scientific course of a college. But while this is going on the shop work with hand tools is necessarily neglected. We have plenty of colleges now for making engineers by the books. These might be improved, perhaps, by adding shop practice. But we also need mechanical schools pure and simple, where the work shall be done by hand and where all, or very nearly all, of the time of a pupil shall be given to the bench. The higher studies of an engineer would, no doubt, be useful to the young mechanic, but schemes of education have to be adapted to the necessities of the pupils, and it is not practicable to give a college education to boys who are expected to become machinists and whose time will be abundantly occupied in the study of mechanical drawing and the use of hand tools. —Philadelphia Ledger.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

Chicago, Milwaukee & St. Paul, annual meeting, at the office in Milwaukee, Wis., June 10, at noon.

Chicago, St. Paul, Minneapolis & Omaha, annual meeting, in Hudson, Wis., June 6.

Milwaukee, Lake Shore & Western, annual meeting, in Milwaukee, Wis., June 10.

St. Paul & Duluth, annual meeting, in St. Paul, Minn., June 15.

Utter & Delaware, annual meeting, at the office in Rondout, N. Y., June 10.

Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

Boston & Albany, 2 per cent., quarterly, payable June 30, to stockholders of record on May 29.

Boston & Lowell, 3 per cent., semi-annual, payable July 1, to stockholders of record on June 13.

Eastern in New Hampshire (leased to Boston & Maine), 2½ per cent., semi-annual, payable June 15.

Northern (New Hampshire), 3 per cent., semi-annual, payable June 1.

Wilmington, Columbia & Augusta, 3 per cent., semi-annual, payable July 10.

Wilmington & Weldon, 4 per cent., semi-annual, payable July 15.

Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:

The Master Car-Builders' Association will hold its annual convention at the Hygeia Hotel, Old Point Comfort (Fortress Monroe), Va., beginning on Tuesday, June 9.

The Yardmasters' Mutual Benefit Association will hold its annual convention in Philadelphia, on Wednesday, June 10.

The Master Mechanics' Association will hold its annual convention in Washington, beginning on Tuesday, June 16.

The American Association of Train Dispatchers will hold its annual convention in Denver, Col., on Tuesday, June 16.

The Association of Railway Telegraph Superintendents will hold its annual meeting in Cleveland, O., on Wednesday, June 17.

The Car Accountants' Association will hold its annual convention in Minneapolis, Minn., beginning on Tuesday, June 23.

The American Society of Civil Engineers will hold its annual convention at Deer Park, Md., beginning on Wednesday, June 24.

The General Baggage Agents' Association will hold its half-yearly meeting in St. Paul, Minn., on Wednesday, July 15.

The National Association of General Passenger & Ticket Agents will hold its next half-yearly meeting in New York, at 11 a. m., on Tuesday, Sept. 15.

Foreclosure Sales.

The Texas & St. Louis road in Texas will be sold under a decree of foreclosure in Tyler, Tex., Aug. 4. The sale will include all the road of the company in Texas—916 miles—with the equipment and other property, and will be made without reserve. By the terms of the sale the purchaser will be required to pay \$50,000 in cash at the time of sale and the remainder on confirmation of the sale, as directed by the Court—such payments to be made in bonds if desired, with such proportion of cash as may be necessary to pay the costs and other prior liens.

Baltimore & Ohio Employees' Relief Association.

The April sheet of this Association shows payments to members as follows: Main Stem, Transportation Department, 175; Machinery Department, 216; Road Department, 137; Baltimore & Philadelphia, 5; Pittsburgh Division, 88; Trans-Ohio divisions, 246; physicians' bills, 116; total, 983.

The largest payments were of \$1,000 each to the mother of J. N. McInturf, brakeman, accidentally killed, and to the widow of Wm. H. Perks, brakeman, also accidentally killed.

Master Car-Builders' Association.

The New York, Philadelphia & Norfolk Co. offers master car-builders attending the convention at Old Point Comfort next week special rates, either for single or excursion tickets over its new road. Excursion tickets will be made good to return via Washington for those who wish to attend the Master Mechanics' Convention also.

Trains leave New York, via Pennsylvania Railroad, at 6:20 a. m. and 8 p. m.; Philadelphia, 8:56 a. m. and 11:10 p. m., arriving at Old Point at 5:15 p. m. and 8:30 a. m.

Orders for reduced-rate tickets will be furnished members and accompanying parties upon application to either M. N. Forney, Secretary, No. 73 Broadway, or Wm. Purcell, at the Master Car-Builders' rooms, No. 113 Liberty street, New York.

ELECTIONS AND APPOINTMENTS.

Atlantic & Pacific.—Mr. B. C. Bosworth has been appointed Division Master Mechanic in charge of the shops at Coolidge, N. M. He was recently Master Mechanic of the Compton Valley road, and was, before going to that line, on the Valley Railroad, of Ohio.

Boston & Maine Leased Lines.—Officers were chosen as below at meetings held June 1: Portland, Saco & Portsmouth.—Directors: W. B. Bacon, F. R. Barrett, T. W. Hyde, Frank Jones, S. C. Lawrence, J. R. Nichols, Arthur Sewall. Portsmouth Bridge Co.—President, Arthur Sewall; Clerk, Wallace Hackett; Treasurer, N. G. Chapin. Portsmouth, Great Falls & Conway.—President, Arthur Sewall; directors, Frank Jones, S. C. Lawrence, John W. Sanborn, C. H. Sawyer. Wolfboro.—Directors, W. B. Bacon, John M. Brackett, Frank Jones, Joseph Lavery, Richard Olney, John W. Sanborn, Arthur Sewall.

Boston & New York Air Line.—At the annual meeting of this company (whose road is leased to the New York, New Haven & Hartford Co.), at Middletown, Conn., June 2, the following were chosen: President, H. B. Hammond; directors, Theodore Adams, Simeon E. Baldwin, W. D. Bishop, J. N. Camp, Benjamin Douglas, S. T. Loomis, S. S. Sands, James D. Smith, George H. Watrous, T. L. Watson; Secretary, T. L. Watson; Treasurer, W. L. Squire.

Brunswick & Western.—Mr. J. F. Snyder has been appointed Auditor of this company, with headquarters at Brunswick, Ga. All communications for the accounting department should be addressed to him.

Buffalo, New York & Philadelphia.—Mr. G. Clinton Gardner, Receiver, has issued circulars containing the following announcements: "By an order of the Circuit Court of the United States for the western district of Pennsylvania and the Circuit Court of the United States for the northern district of New York, I have been appointed Receiver of the Buffalo, New York & Philadelphia Railroad Co.'s entire railroad, and of all its properties and income."

"All persons who are in the service of this railroad company will be retained by the Receiver in the several positions now occupied by them until otherwise ordered."

"By order of the respective courts all persons are enjoined from interfering with the Receiver in the possession of, or the management of said properties, and from levying upon, selling, or attempting to sell the same; and officers or employees will promptly report to the Receiver any attempt at its violation, and, as far as possible, aid in enforcing the orders of the respective courts."

"Mr. John Dougherty is hereby appointed Treasurer and General Accountant for the Receiver, with office at No. 15 Broad street, Mills Building, New York City. He will also purchase all supplies used by the company."

Canada Southern.—At the annual meeting in St. Thomas, Ont., June 3, the following directors were chosen: L. F. Barger, J. E. Brown, C. F. Cox, Sidney Dillon, A. G. Dulman, James Tillinghast, Cornelius Vanderbilt, Wm. H. Vanderbilt, E. A. Wickes.

Carson & Colorado.—At the annual meeting in Hawthorne, Nev., recently, the following directors were elected: H. M. Yerington, D. L. Bliss, W. D. Tobey, S. H. Wright, A. Helm, D. A. Bender, S. F. Smith. The board elected the following officers: H. M. Yerington, President and General Superintendent; D. L. Bliss, Vice-President; D. A. Bender, Secretary; S. F. Smith, Treasurer.

Cattle King.—The directors of this new company are: R. W. Evans, D. M. Frost, S. Gallagher, Dodge City, Kan.; O. H. Bentley, H. D. Friend, R. Hatfield, Wichita, Kan.; M. Nuckolls, Independence, Kan.; C. J. Gavin, Englewood, Kan.; R. T. Grier, Kansas City, Mo.; C. D. Perry, Englewood, Ill.; J. M. Day, Austin, Texas.

Chesapeake & Delaware Canal Co.—At the annual meeting in Philadelphia, June 1, officers were elected as follows: President, Joseph E. Gillingham; directors, Isaiah V. Williamson, Edwin Swift, Charles H. Hutchinson, Mahlon P. Hutchinson, Henry C. Ford, R. Dale Benson, Hood Gilpin, Peter C. Hollis, Henry Lewis, David Scull, Thomas McKean, Andrew Gray, John Cadwalader and Charles Chauncey.

Chicago & Alton.—Mr. M. C. Lackland has been appointed Claim Agent of this road for the state of Missouri, in place of J. T. Pendleton, resigned.

Chicago & Evanston.—Mr. E. G. Nourse is Chief Engineer of this road. Office, Ashland block, Chicago.

Chicago, Milwaukee & St. Paul.—John E. McClure has been appointed Western Passenger Agent of this company, with headquarters at No. 1403 Farnam St., Omaha, Neb. Alex. Mitchell, Jr., is continued as Traveling Agent, with headquarters at Salt Lake City, Utah.

Chicago, Rock Island & Pacific.—At the annual meeting in Chicago, June 3, the following directors were elected: David Dows, R. R. Cable, Hugh Riddle, H. R. Bishop and Sidney Dillon. The directors subsequently elected the following officers: R. R. Cable, President; David Dows, Vice-President; A. Kimball, Second Vice-President; W. G. Purdy, Secretary and Treasurer, vice F. H. Tows, resigned on account of ill health, and J. R. Cowing, Assistant Secretary and Treasurer. It was decided to remove the office of the Secretary and Treasurer from New York to Chicago.

Mr. Purdy, the newly-elected Secretary and Treasurer, is a native of Baltimore, 42 years old, and has been a railroad man since 1859, when he entered the service of the Illinois Central. In February, 1863, he became a clerk of the Ohio & Mississippi at St. Louis, and left that office a year later to become chief clerk in the Quartermaster's Department of the United States. Resigning that position in December, 1866, he entered the service of the Rock Island, holding responsible positions in the Chicago office ever since.

Chicago & Western Indiana.—At the annual meeting in Chicago, June 3, the following directors were chosen: Frederick Broughton, John B. Carson, Chicago; W. J. Spicer, Detroit; George H. Ball, Boston; A. L. Hopkins, New York.

Cincinnati, New Orleans & Texas Pacific.—The following circular from President Frank S. Bond is dated Cincinnati, May 29:

"Mr. John Scott having tendered his resignation as General Manager of the railways of the Associated Companies, it is accepted to take effect on June 1 next, and the office of General Manager will be temporarily discontinued from that date."

"The several railways with all the real estate and personal property appurtenant thereto, including shops, depots, and other buildings; the motive power, rolling stock, and all other property connected with the business of the several companies, will, on and after June 1, be in charge of R. Carroll, General Superintendent."

"The Comptroller of Accounts, C. C. Harvey; the General Freight Agent, H. Collbran; the General Passenger Agent, E. P. Wilson, and the Purchasing Agent, R. W. Healy, will, until otherwise directed, report to and take their instructions from the President."

It is announced that Mr. John C. Gault will succeed Mr. Scott as General Manager of this company and its controlled lines. Mr. Gault is well-known from his service as General Superintendent or General Manager on the Chicago & Northwestern, the Chicago, Milwaukee & St. Paul and the Wabash, St. Louis & Pacific roads; for two years past he has been Arbitrator of the Western Truck Lines Association.

Columbus, Chicago & Indiana Central.—At the annual meeting Columbus, O., June 3, the following directors were chosen: J. T. Brooks, S. B. Liggett, Wm. Mullins, J. W. Renner, Wm. Stewart. The company still retains its organization, although its property has been transferred to a new organization.

Denver & New Orleans.—The directors of this company as reorganized are: William Barton, J. S. Brown, Job Cooper, John Evans, Cyrus W. Fisher, E. A. Keener, Charles B. Kountz, George Trich, R. W. Woodbury. The board has elected John Evans President; J. S. Brown, Vice-President; Charles Wheeler, Secretary; Charles B. Kountz, Treasurer; Cyrus W. Fisher, General Manager. Office in Denver, Colorado.

Detroit & St. Clair.—This company has been organized with the following officers: President, C. McElroy, St. Clair, Mich.; Vice-President, L. B. Parker, Marine City, Mich.; Secretary, Franklin Moore, St. Clair, Mich.; Treasurer, Mark Hopkins, St. Clair, Mich.; Auditor, V. A. Saph, Marine City, Michigan.

East & West, of Alabama.—The following circular from the office of President E. F. Browning is dated New York, May 28: "Mr. T. J. Nichol is appointed General Manager of the East & West Railroad Co., of Alabama, with headquarters at Cedartown, Ga., vice Capt. John Postell, resigned. Appointment to take effect June 1."

Georgia Railroad and Banking Co.—At the annual meeting in Augusta, Ga., the following were elected: President, C. H. Phinizy; directors, J. H. Alexander, Joel Billups, A. W. Calhoun, Thomas W. Coker, John Davison, James S. Hamilton, H. H. Hickman, George Hillyer, N. L. Hutchins, H. D. McDaniel, Ferdinand Phinizy, William M. Reese, Josiah Sibley, D. N. Speer, Thomas Stevens, M. P. Stovall.

Goldsboro, Snow Hill & Greenville.—Mr. W. W. Kornegay, of Goldsboro, N. C., is President of this company.

Humeston & Shenandoah.—Mr. C. C. Murphy has been appointed General Manager of this road, in place of Mr. F. O. Wyatt, resigned.

Illinois Central Leased Lines.—At meetings held in Chicago last week, officers were chosen as below: Chicago & Springfield.—President, J. C. Clarke; Secretary, A. G. Hackstaff; Treasurer, Henry DeWolf. Kankakee & Southwestern.—The same. South Chicago.—The same. Mount City.—Directors, B. F. Ayer, Stuyvesant Fish, E. H. Harriman, Henry DeWolf.

Interstate Railroad Co.—The directors of this new company are: R. G. Brady, C. A. Ballwegg, C. P. Clash, W. H. Dale, D. M. Davis, E. Fowler and E. S. Thatcher, all of Emporia, Kansas.

Jeffersonville, Madison & Indianapolis.—At the annual meeting in Jeffersonville, Ind., May 20, the old directors were re-elected, with the exception of Mr. S. S. McKernan, who declined further service, and was succeeded by Mr. J. H. McCampbell. Mr. McKernan also resigned as Treasurer and Secretary of the company, and S. B. Liggett was elected Secretary, and John E. Davidson, Treasurer.

Kansas City Belt.—This company has elected George H. Nettleton President; C. F. Morse, Vice-President; W. J. Ferry, Secretary and Treasurer.

Louisville Bridge Co.—Mr. J. H. McCampbell has been chosen Secretary and John E. Davidson Treasurer, in place of Mr. S. S. McKernan, resigned.

Louisville, New Orleans & Texas.—Mr. A. J. Knapp has been appointed General Freight and Passenger Agent, with office in Memphis, Tenn., in place of J. S. Davant, resigned.

Manchester & Lawrence.—At the annual meeting in Manchester, N. H., May 29, the following directors were chosen: Edward A. Abbott, Nathan Barker, Wm. P. Fowler, B. F. Martin, Joseph W. Smith, Wm. A. Tower, John A. White. The board elected B. F. Martin, President; Samuel V. Bell, Clerk.

Marietta & North Georgia.—At a meeting of the board in Marietta, Ga., last week, Joseph Kinsey, of Cincinnati, was re-elected President; J. B. Glover was re-elected General Manager; F. W. Glover was elected General Traveling Freight and Passenger Agent; F. B. Chandler, late station agent at Canton, Ga., was appointed General Freight and Passenger Agent in place of W. R. Power, resigned. Mr. Mumford Bradley, takes Mr. Chandler's place at Canton.

Memphis, Selma & Brunswick.—The present officers of this newly opened road are: Receiver, Newman Erb; Chief Engineer, Jas. A. Meriwether; Superintendent, W. P. Dunaway; General Freight Agent, O. H. P. Piper; Auditor, T. S. Hare; Roadmaster, M. Holden. Offices in Memphis, Tenn.

Mexican National.—Mr. D. C. Dodge has been chosen Vice-President and General Manager. Mr. Dodge has served on the Chicago & Northwestern and the Kansas Pacific, and more recently on the Denver & Rio Grande as Traffic Manager, and afterward as General Manager.

Missouri Pacific.—The following circular has been issued from the office of the General Traffic Manager:

"Mr. L. A. Emerson is hereby appointed General Freight Agent of all the lines owned and controlled by this company north of Denison and Texarkana, Tex. The position of First Assistant General Freight Agent is hereby abolished."

Mr. Emerson has been First Assistant General Freight Agent since November last only. He was previously with the Chicago & Northwestern road.

New Brunswick.—Mr. J. F. Leavitt is appointed General Passenger and Ticket Agent for this company, with headquarters at St. John, New Brunswick.

Newton, Walnut Valley & Denver.—The directors of this new company are: A. L. Stone, Bureka, Kan.; S. E. Brown, P. C. Hughes, Larned, Kan.; R. C. Bailey, W. H. Campbell, Great Bend, Kan.

Northern (New Hampshire).—At the annual meeting in Concord, N. H., May 28, the following directors were chosen: Josiah H. Benton, Jr., Benjamin P. Cheney, Uriel Crocker, George W. Nesmith, Silas Pierce, Alvah W. Sulloway, George E. Todd.

Northern Pacific.—Mr. F. P. Waymouth has been appointed Superintendent of the Cascade Division, with office at Sprague, Wash. Ter., and C. S. Prowell Assistant Superintendent, with office at North Yakima, Wash. Ter.

Mr. Wade Converse has been appointed Assistant Superintendent and Roadmaster of the Wisconsin Division.

Pennsylvania Company.—At the annual meeting in Pittsburgh, June 2, the following directors were chosen: W. H. Barnes, J. N. McCullough, Thomas D. Messler, William Thaw, Pittsburgh; A. J. Cassatt, J. N. DuBarry, John P. Green, H. H. Houston, Wistar Morris, George B. Roberts, Edmund Smith, J. P. Wetherill, Henry D. Welsh, Philadelphia. The only new director is Mr. Welsh, who succeeds Henry M. Phillips, deceased.

St. John & Maine.—At the annual meeting in London England, May 12, Messrs. D. W. Hill, W. J. Stride and George Wedd were re-elected directors. Messrs. Kemp, Ford & Co. were chosen auditors for the stockholders.

St. Louis, Alton & Terre Haute.—At the annual meeting in St. Louis, June 1, the following were chosen directors: W. Bayard Cutting, George W. Parker, M. B. Brown, H. C. Stevison, F. C. Hollins, W. A. Wheeler, Levi Davis, W. K. Murphy, Edward Abend, James A. Eads, Eli Wiley, H. H. Beach and F. M. Youngblood. The board organized by electing W. Bayard Cutting, President; George W. Parker, Vice-President and General Manager; E. F. Leonard, Secretary.

St. Louis & Chicago.—The office of this new company is in Litchfield, Ill.; the directors are Henry Beach, John A. Hunter, John J. McLean, Lewis H. Thomas and D. L. Wing.

Scioto Valley.—Mr. J. Robinson has been appointed Receiver of this road. He has been Treasurer of the company for some time.

Seaboard & Roanoke.—A circular has been issued by President Robinson, giving notice that Mr. L. T. Myers has been appointed Superintendent of Transportation and Machinery; J. S. Brown, Master of Transportation, and M. M. Pendleton, Master of Machinery.

Sullivan County.—This company, which is controlled by the Connecticut River Co., has elected A. B. Harris President; J. H. Albin, C. J. Amidon, Frederick Billings, H. C. Robinson, N. E. Martin and J. B. Page Directors; J. H. Albin, Clerk; E. F. Lane, Treasurer.

Suncook Valley.—At a meeting held in Manchester, N. H., May 28, Samuel N. Bell was chosen President and R. T. Cilley Clerk. The Suncook Valley Extension Co. at the same time elected the same officers.

Wabash, St. Louis & Pacific.—Mr. M. Morris has been appointed Division Master Mechanic at Fort Wayne, Ind. He has been for some time past in charge of the shops at Palestine, Tex., on the Missouri Pacific.

Wisconsin Central.—At the annual meeting in Milwaukee, May 28, C. L. Colby, E. J. Barney and E. H. Abbott were chosen directors for three years. The board has re-elected C. L. Colby President; E. H. Abbott, Vice-President and Secretary.

Wisconsin, Iowa & Nebraska.—The following circular from Superintendent George C. McMichael is dated Marshalltown, Ia., May 27:

"In addition to his duties as local Treasurer, Mr. J. V. Johnston will, on and after June 1, assume the duties of Purchasing Agent. All requisitions for the purchase of supplies must be signed by him."

PERSONAL.

—Mr. Francis H. Tows, for many years Secretary and Treasurer of the Chicago, Rock Island & Pacific Co., retired from that position at the annual meeting this week, on account of continued ill health.

—Mr. G. Bouscaren, having resigned his position as Chief Engineer of the Cincinnati, St. Louis & Texas Pacific road, has opened an office as civil and consulting engineer at No. 35 West Fourth street, in Cincinnati.

—Mr. Alexander J. Knapp, for nine years past General Freight and Ticket Agent of the Mississippi & Tennessee road, retired from that office to accept the same position on the Louisville, New Orleans & Texas.

—Mr. S. S. McKernan has resigned his position as Secretary and Treasurer of the Jeffersonville, Madison & Indianapolis Co. on account of his advanced age and feeble health. He has held the office for more than 20 years.

—Mr. James S. Davant has resigned his position as General Freight and Passenger Agent of the Louisville, St. Louis & Texas road. He has held the office only about a year, having gone to that line from the Port Royal & Augusta road.

—Mr. Silvanus Miller has resigned his position as Chief Engineer of the Northern Railroad of Guatemala, to accept that of Engineer of the American Contracting & Dredging Co., in charge of the works at Gatun, on the Panama Canal.

—Mr. W. S. Bissell, a prominent business man of Pittsburgh, died in that city, May 27. He was for many years a director of the Pittsburgh & Connellsville Co. He was also President of the Pittsburgh & East End Railroad Co. and of the Westmoreland Coal Co., and was interested in several other companies.

—Mr. Samuel N. Pusey, a prominent citizen of Wilmington, Del., died suddenly in that city, May 30, of paralysis of the heart. He was 70 years old. Mr. Pusey was one of the founders of the Harlan & Hollingsworth Co., having established the shipyard now owned by that company, which was first started by himself, Samuel Harlan and Mahlon Betts, in 1836.

—Mr. W. B. Shattuc, General Passenger Agent of the Ohio & Mississippi road, has begun a suit against the St. Louis Railway Register for damages for libel. The libel consisted in statement published in that paper that Mr. Shattuc had divided commissions with the ticket agents of the road, and that through his influence the road had paid an exorbitant amount on such commissions.

—Mr. Nigel Bruce, of Pittsburgh, died suddenly at the Windsor Hotel in New York, June 1, while on a visit to that city on business. He was 35 years old, and was born in Pittsburgh. He studied law, but subsequently entered the service of the Pennsylvania Railroad, and was later appointed Assistant Paymaster. He left that road to become Secretary of the Pittsburgh Junction Co., and was last year appointed Superintendent of the Junction road and Assistant to the General Manager of the Pittsburgh & Western road.

—Mr. J. H. Setchel has resigned his office as General Master Mechanic of the Ohio & Mississippi road and accepted the position of Superintendent of the Brooks Locomotive Works at Dunkirk, N. Y. Mr. Setchel was for 21 years Master Mechanic of the Little Miami road, and three years ago left that road to go to the Ohio & Mississippi. He has been Secretary of the Master Car-Builders' Association for many years, and is widely known as an able and efficient Master Mechanic and as a careful and faithful officer of the Association. The Brooks Locomotive Works have been very fortunate in securing Mr. Setchel's services.

—Mr. Samuel E. Olmstead died at his residence in Norwalk, Conn., May 27, from injuries received from the upsetting of his carriage some days before. Mr. Olmstead was 61 years old, and was for a number of years in business in Norwalk, where he secured a moderate fortune. Some 19 years ago he became interested in the project of building a road from New York to New Haven parallel to the New York, New Haven & Hartford, and had continued to work for the project ever since, having been connected with a number of different companies organized to build the so-called "Parallel road." At the time of his death he was President of the New York & Connecticut Air Line Co., which was the latest name under which the Parallel project had been organized.

TRAFFIC AND EARNINGS.

Coal.

Coal tonnages for the week ending May 23 are reported as follows:

	1885.	1884.	Inc. or Dec.	P. c.
Anthracite.....	625,036	522,908	I. 102,128	19.5
Bituminous.....	191,421	198,246	D. 6,825	3.4
Coke.....	49,120	67,092	D. 17,972	26.8

The anthracite market is reported quiet, with actual prices considerably below the company's lists.

Shipments of Pocahontas coal over the Norfolk & Western road in April were 39,415 tons; Flat Top coal, 16,500; total, 55,915 tons. A contract has been made for supplying the coal used by the Seaboard & Roanoke road from the Flat Top mines.

The anthracite coal tonnage of the Belvidere Division, Pennsylvania Railroad, for the five months to May 30 was:

	1885.	1884.	Inc. or Dec.	P. c.
Coal Port for shipment.....	21,946	22,898	D. 952	4.1
St. Ambey.....	221,920	251,364	D. 29,435	11.4
Local points on N. J. divs.....	345,882	324,186	I. 21,696	6.7
Co.'s use.....	90,993	76,350	I. 14,643	19.3
Total.....	680,750	674,798	I. 5,952	0.9

Of the total this year 543,672 tons were Lehigh and 137,078 tons Wyoming coal.

Actual tonnage passing over the Huntingdon & Broad Top road for the five months was:

	1885.	1884.	Decrease.	P. c.
Broad Top coal.....	73,627	81,237	7,610	9.4
Cumberland coal.....	169,864	178,015	8,151	4.6
Total.....	243,491	259,252	15,761	6.1

The Broad Top coal is mined on the line; the Cumberland is carried through for the Pennsylvania Railroad.

Cumberland coal shipments for the five months to May 30 are reported by the Cumberland Civilian as follows:

	1885.	1884.	Inc. or Dec.	P. c.
Baltimore & Ohio R. R.....	\$825,615	706,004	I. 119,611	16.8
Pennsylvania R. R.....	753,380	163,573	D. 10,174	6.2
Chesapeake & Ohio Canal.....	82,775	97,937	D. 15,162	18.5
Total.....	\$1,661,770	\$1,027,514	I. 634,256	61.8

Local deliveries are included in Baltimore & Ohio tonnage. Shipments from mines were by Cumberland & Pennsylvania road, 697,470; George's Creek & Cumberland, 186,828; West Virginia Central & Pittsburgh, 181,021; total, 1,065,320 tons.

The coal tonnage of the Pennsylvania Railroad Division, Pennsylvania Railroad, for the five months was:

	1885.	1884.	Inc. or Dec.	P. c.
Coal.....	4,359,985	4,107,616	I. 252,369	6.1
Coke.....	1,028,972	1,272,937	D. 244,965	19.2
Total.....	5,388,957	5,380,553	I. 8,404	0.2

This includes all coal and coke carried over the road, whether mined on the line or received from connecting roads.

Railroad Earnings.

Earnings of railroad lines for various periods are reported as follows:

	1885.	1884.	Inc. or Dec.	P. c.
Chl. Mil. & St. P.....	\$8,649,000	\$8,537,336	I. \$111,664	1.7
Chl. & East. Ill.....	626,554	564,796	I. 61,758	10.9
St. L. & San F.....	1,180,000	1,285,700	D. 105,700	8.2

Five months ending May 31:

	1885.	1884.	Inc. or Dec.	P. c.
Atch., T. & S. F.....	\$4,824,404	\$5,049,424	D. \$225,020	4.5
Net earnings.....	2,047,686	2,500,754	D. 453,068	18.1
Canadian Pacific.....	2,008,565	1,122,826	I. 885,739	78.7
Net earnings.....	604,744	317,269	I. 287,475	90.6
Ches. & Ohio.....	1,030,780	.....	.....	.....
Net earnings.....	300,887	.....	.....	.....
E. Ten. Va. & G.....	1,200,318	1,201,008	D. 690	0.1
Net earnings.....	413,505	439,135	D. 25,630	6.0
Eliz., Lex. & B. S.....	213,318	.....	.....	.....
Net earnings.....	54,434	.....	.....	.....
Louisv. & Nash.....	4,694,271	4,367,777	I. 326,494	7.5
Net earnings.....	1,882,198	1,385,216	I. 496,982	35.9
N. Y. & N. England.....	982,553	1,010,627	D. 28,074	4.7
Net earnings.....	294,179	174,132	I. 120,047	69.0
Northern Pacific.....	2,692,823	3,554,638	D. 861,815	24.2
Net earnings.....	817,738	1,589,284	D. 771,546	48.6
West Jersey.....	303,676	312,164	D. 8,488	2.7
Net earnings.....	100,058	118,280	D. 18,221	15.5

Month of April:

	1885.	1884.	Inc. or Dec.	P. c.
Atch., T. & S. F.....	\$1,297,825	\$1,306,000	D. \$8,175	0.6
Net earnings.....	571,759	587,611	D. 15,852	4.4
Canadian Pac.....	692,141	343,967	I. 348,174	104.2
Net earnings.....	324,365	25,027	I. 299,338	.....
Ches. & Ohio.....	290,001	.....	.....	.....
Net earnings.....	83,074	.....	.....	.....
E. Ten. Va. & G.....	276,693	291,519	D. 14,826	5.1
Net earnings.....	43,821	98,172	D. 54,351	55.5
Eliz., Lex. & B. S.....	55,688	.....	.....	.....
Net earnings.....	16,778	.....	.....	.....
Louisv. & Nash.....	1,158,698	1,125,291	I. 33,407	3.0
Net earnings.....	444,028	358,295	I. 85,733	24.0
N. Y. & N. England.....	262,102	275,507	D. 13,405	4.9
Net earnings.....	72,237	61,383	I. 10,854	17.8
Northern Pacific.....	877,965	1,441,515	D. 563,550	39.1
Net earnings.....	399,583	843,347	D. 443,764	52.6
West Jersey.....	94,307	93,185	I. 1,022	1.1
Net earnings.....	37,973	35,937	I. 1,936	5.4

Month of May:

	1885.	1884.	Inc. or Dec.	P. c.
Chl. Mil. & St. P.....	\$1,875,000	\$1,985,767	D. \$110,767	5.6
Chl. & East. Ill.....	128,566	112,399	I. 16,257	14.5
St. L. & San F.....	319,000	357,500	D. 38,500	10.7

Third week in May:

	1885.	1884.	Inc. or Dec.	P. c.
Bur., C. R. & No.....	\$53,993	\$49,387	I. \$4,606	9.4
Chl. & Alton.....	155,066	167,059	D. 11,993	7.2
Chl. & W. Mich.....	24,178	29,346	D. 5,168	17.8
St. L. & No.....	21,120	27,043	D. 5,923	21.9
Illinois Central.....	215,500	198,393	I. 17,107	8.6
Iowa lines.....	31,800	32,271	D. 471	1.4
Mill. L. S. & W.....	21,985	21,175	I. 810	3.8
St. P. & Duluth.....	21,106	23,244	D. 2,138	9.2

* Deficit.

Weekly earnings are usually estimated in part, and are subject to correction by later statements. The same remark applies to early statements of monthly earnings.

Petroleum.

The production and shipments of the Pennsylvania and New York oil wells in April is given as follows by *Stowell's Petroleum Reporter* in barrels of 42 gallons:

	1885.	1884.	Inc. or Dec.	P. c.
Production.....	1,780,290	2,065,860	D. 285,570	13.8
Shipments.....	1,823,726	1,643,536	I. 180,190	10.9
Stock, April 20.....	36,464,800	38,148,070	D. 1,683,270	4.4
Producing wells.....	22,093	21,242	I. 851	4.0

Of the total production the Allegheny District in New York furnished 12.5 per cent.; the Bradford District in Pennsylvania, 39.7; the Warren District, 11.5; the Lower District, 36.3 per cent.

Stock was diminished by 43,436 barrels during the month, that being the excess of shipments over production.

Shipments for the month were as follows, in barrels:

	Crude.	Refined.	Total.	P. c.
New York.....	593,451	44,699	638,150	75.0
Philadelphia.....	334,475	14,065	348,540	19.1
Baltimore.....	17,481	1,280	18,761	9.5
Boston.....	20,734	44,326	65,060	3.0
Cleveland.....	258,633	.....	258,633	14.2
Pittsburgh.....	82,072	.....	82,072	4.6
Local points.....	218,103	37,727	255,830	14.0
Refined at Creek refineries.....	142,197	.....	142,197	.....
Total.....	1,823,726	142,197	1,965,923	100.0

In this table the refined oil is that refined at Creek refineries; it is reduced to its equivalent in crude, so that the total represents the amount of crude oil shipped to each point, whether in crude or in refined form.

Cotton.

Cotton movement for the nine months of the crop year from Sept. 1 to May 29 is reported by the *Commercial and Financial Chronicle* as follows, in bales:

	1884-85.	1883-84.	Inc. or Dec.	P. c.
Receipts.....	2,591,688	2,825,849	D. 234,161	8.3
Shipments.....	2,551,096	2,810,831	D. 259,735	6.2
Stock, May 29.....	57,807	64,174	D. 6,367	9.9

It must be remembered that a large part of the shipments from interior markets appears again in the receipts at the seaports.

The *Chronicle* says: "In the table below we give the receipts from plantations, and add to them the net overland movement to May 1, and also the takings by Southern spinners to the same date, so as to give substantially the amount of cotton now in sight:

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they decline to be governed by Rule No. 20 of the Master Car-Builders' Association, which reads as follows:

"When a car is damaged or destroyed on a private track, the railroad company delivering the car upon such track shall be responsible to car owner for the making good the damage by the owner of the private track."

"Notice is hereby given to all railroad and transportation companies into whose possession, by the interchange of traffic or otherwise, cars belonging to this company may come, not to place or deliver said cars on any private track or in any position whatsoever where the company placing said cars declines to accept the responsibility provided for in the rule referred to above."

Liquor Shipments to Kansas.

The druggists who, under the Kansas prohibitory law, are the only persons allowed to sell liquor in that State, are trying to secure some relaxation of the regulations controlling the shipment of liquor into the State. One of them thus describes his difficulties, after securing the necessary permit (of which he must have four copies) from the Probate Court:

"I have bought a barrel of whisky in Cincinnati and another in Kansas City. I must send one copy to each of those places before the railroads will receive the goods, and have two copies ready to present to the railroad company here before they will deliver it to me."

The railroad lines are complying strictly with the law, which imposes heavy penalties for delivery to unauthorized persons.

Lake Superior Iron Ore.

Shipments of iron ore from the Lake Superior region up to May 27 are reported by the *Marquette Mining Journal* as below:

	Marquette Dis.	Menominee Dis.	Total.
L'Anse	1,785	.....	1,785
Marquette	37,323	.....	37,323
Escanaba	39,354	65,705	105,059
St. Ignace	16,429	.....	16,429
Total	94,891	65,705	160,596

Escanaba usually has a much larger proportion of the early shipments than the Lake Superior ports. Shipments of pig-iron were 245 tons.

Passenger Rates.

At a meeting of the Chicago general passenger agents last week, it was resolved to make the regular rates to New York \$18.50, with the understanding that the New York Central and the West Shore would make their New York-Buffalo tickets at so short a limit of time as to prevent their use in connection with Chicago-Buffalo tickets for through passage.

A later dispatch (June 1) says: "At a meeting of the general passenger agents of all the roads running from Chicago to the East, with the exception of the Chicago & Atlantic, it was agreed to make the rate from Chicago to New York, Philadelphia, Baltimore, and Washington \$17 for first class and \$13 for second class, and to Boston \$19 and \$15 respectively. This was done to meet the cutting by the Nickel Plate road, and the agreement will be maintained regardless of further cuts by that road. The Pennsylvania road, however, announces its determination to start a lively war if any of the roads consenting to this rate should enable scalpers to undersell regular agents."

The Pennsylvania has reduced fares on its limited trains, as well as those on the ordinary trains.

Colorado-Utah Association.

The Chicago, Milwaukee & St. Paul has given 30 days' notice of its withdrawal from this Association, in consequence of the reduction of its percentage by the recent award.

Buffalo Grain Traffic.

Buffalo grain receipts by lake up to May 31 were as follows, flour in barrels and grain in bushels, flour being reduced to wheat in the totals:

	1885.	1884.	Inc. or Dec.	P. c.
Flour.....	150,739	125,546	L. 25,193	20.0
Grain.....	6,755,312	6,915,563	D. 160,251	2.3
Total, bushels....	7,519,007	7,543,233	D. 24,226	0.3

Shipments eastward of grain received by lake for the same period were, in bushels:

	1885.	1884.	Inc. or Dec.	P. c.
By canal.....	4,697,347	4,900,180	D. 202,833	4.1
By rail.....	3,554,493	1,293,582	L. 2,260,913	174.0
Total.....	8,251,742	6,193,771	L. 2,057,971	33.2

The canal opened May 11 this year and May 7 last year, a difference of four days only.

Central Iowa Association.

Arbitrator George M. Bogue's new award of percentages affecting the Central Iowa Traffic Association has been made public. The allotment, compared with that formerly in use, is as follows:

Road.	New.	Old.
Rock Island	40	37
Wabash	15	15
Burlington	15	15
Northwestern	15	16
St. Paul	15	16
Total	100	100

These percentages will be in effect from April 1, 1885, to Jan. 1, 1886. As usual, all the lines complain of the award.

Southern Railway & Steamship Association.

The Rate Committee met in Atlanta last week, but took no special action, most of the time being devoted to a rearrangement of the classifications. There was much discussion over the present situation, but no action was taken.

Southern Passenger Rates.

It is reported from Atlanta that the East Tennessee, Virginia & Georgia has offered to withdraw all its cut passenger rates, provided it is allowed the differential rates which it claims to leading points.

It is said that the Georgia Railroad Commission will present a bill to the Legislature authorizing to fix minimum as well as maximum rates, the object being to prevent the severe cutting of rates which prevails at times.

Transcontinental Association.

A dispatch from Chicago, June 2, says: "Arbitrators George W. Bogue, D. S. Gray and E. A. Ford to-day announced their award of percentages in the Eastern division of the transcontinental pool. These percentages will rule from Jan. 1, 1885, with 90 days' notice required in case of a desire to withdraw. The following are the percentages on passenger traffic: Union Pacific, main line, 41%; Union Pacific and Denver & Rio Grande, *via* Denver, 2; Burlington & Missouri and Denver & Rio Grande, 15½; Burlington & Missouri and Union Pacific, *via* Denver, 2; *via* Deming, 2; Atchison, Topeka & Santa Fe and Denver & Rio Grande, *via* Pueblo, 2; Atchison, Topeka & Santa Fe and Atlantic & Pacific, *via* Albuquerque, 19; Atchison, Topeka & Santa Fe and Southern Pacific, *via* Deming, 6; Texas & Pacific and Southern Pacific, *via* El Paso, 6; San Antonio and Southern Pacific, 6.

"The freight percentages are: Union Pacific, 40; Burling-

ton & Missouri and Denver & Rio Grande, 10; Atchison, Topeka & Santa Fe and Denver & Rio Grande, 1; Atchison, Topeka & Santa Fe and Atlantic & Pacific, *via* Albuquerque, 19; Atchison, Topeka & Santa Fe and Southern Pacific, *via* Deming, 3; Texas & Pacific and Southern Pacific, *via* El Paso, 10; San Antonio & Southern Pacific, 17."

Northwestern Association.

Commissioner George L. Carman, of the Northwestern Traffic Association, received from Arbitrator George M. Bogue the new award of percentages governing traffic of the association. The percentages are to be in effect from April 1, 1885, to March 30, 1886. The new award on west-bound business allows the Rock Island & Peoria road 1 per cent. and the Washburn route 4 per cent. of the gross revenue. The remainder is divided as follows:

Road.	Per cent.
St. Paul	34½
Northwestern	30½
Rock Island	21½
Burlington	13
Total	100

The new east-bound award allows the Washburn route 15 per cent. after the deduction of the earnings on live stock. The remainder is thus divided:

Road.	Per cent.
St. Paul	36
Omaha	32½
Minneapolis & St. Louis	21½
Total	100

The chief change is the allowance of an increased percentage to the Burlington road.

New Dining Car Service.

Passengers east of Chicago who have any curiosity as to what the Chicago & Northwestern dining cars are, and who are unable to test them in their own territory, are now afforded extra means of gratification. Pending the completion of their own cars for this important and, among patrons of the Northwestern, popular service, the Lake Shore & Michigan Southern road has arranged to run Chicago & Northwestern dining cars on its limited express train leaving Chicago at 5:30 p. m., and arriving in Chicago at 9:50 a. m. These cars will be away from home and among strangers, it is true, but they will be run by Chicago & Northwestern people, which is a sufficient guarantee of the quality of the service.

RAILROAD LAW.

Loss of Baggage—Responsibility.

In the case of the Missouri Pacific Co., appellant, against Slater, just decided in the Texas Court of Appeals, appellee sued appellant for loss and damage to baggage. She bought tickets for herself and children from the agent of the Erie Railway in New York, and her tickets were recognized by all connecting lines from New York to Austin. There was no proof that the loss or damage occurred on the line of the appellant, which appellant insists must be made in order to place liability. This Court holds that the position is not well taken. The rule is that when connecting lines of railways are operated in conjunction with each other, sell through passenger tickets, give baggage checks which each recognizes, and the passenger or his baggage is allowed to pass thereon, without extra charges, each road becomes the agent of all the others to transport the baggage to the place of destination, and is liable to any damage to or loss of the baggage without the owner being compelled to prove when or how the loss occurred. It was not, therefore, necessary for the appellee to allege and prove the loss or damage while in appellant's possession, or a contract with appellant, or more than that the checks and through ticket given at New York were recognized by appellant. To partake of the nature of baggage for the loss or damage to which an action will lie, the articles must be necessary to the use and convenience of the passenger on the journey that he is at the time making. A family portrait, a group of photographs, a meerschaum pipe and chandeliers are not such articles of baggage. Reversed and remanded.

Taxing Interstate Commerce.

A dispatch from Madison, Wis., June 3, says: "The Wisconsin Supreme Court has decided in the case of the State against the Pullman Palace Car Co. that the statute which obliged the company to pay to the state a license fee of 2 per cent. on gross earnings 'between points within the state of Wisconsin' cannot be construed to apply to business from points without the state to points within, or in crossing the state between points without the state. The Court also held that the power of a Legislature to enact laws in relation to taxing companies on their earnings in transporting passengers into, out of or across the state is in grave doubt. Justice Cassidy filed a dissenting opinion."

The Connecticut "Short-Haul" Law.

The following is the so-called "short-haul" bill, which has passed both houses of the Connecticut Legislature; the words in italics were not in the bill as presented last year and then defeated, but were inserted this year:

"SECTION 1. No railroad corporation shall charge or receive for the transportation of freight to any station on its road a greater sum than is at any time charged or received for the transportation of the like kind and quantity of freight from the same original point of departure and under similar circumstances to a station at a greater distance on its road in the same direction. Two or more railroad corporations, whose roads connect, shall not charge or receive for the transportation of freight to any station on the road of either of them a greater sum than is at the time charged or received for the transportation of the like kind and quantity of freight from the same original point of departure and under similar circumstances to a station at a greater distance on the road of either of them in the same direction. In the construction of this section the sum charged or received for the transportation of freight shall include all terminal charges; and the road of a corporation shall include all the road in use by it, whether owned or operated under a contract or lease.

"SEC. 2. A railroad corporation which violates any provision of the preceding section, in addition to the liability for all damages sustained by reason of such violation, shall be liable for each offense to a penalty of \$200, to be recovered in an action under this statute to his own use by the party aggrieved, or to the use of the commonwealth by the state attorney of the county in which such violation was committed, but no such action shall be maintained unless the same is brought within one year from the date of such violation."

OLD AND NEW ROADS.

Americus, Preston & Lumpkin.—The grading on the 20 miles of road from Americus, Ga., to Preston is now nearly completed, and tracklaying was begun from Americus last week.

Atchison, Topeka & Santa Fe.—This company's

statement for April and the four months to April 30 is as follows:

	April.	Four Months.
	1885.	1884.
Miles worked....	2,375	2,329
Earnings.....	\$1,297,825	\$1,306,000
Expenses.....	736,008	718,369
Net earnings....	\$561,759	\$587,631
Per cent. of exps.	56.7	55.0

For the four months the gross earnings decreased \$225,020, or 4.5 per cent., while the expenses increased \$228,068, or 8.9 per cent.; the result being a decrease of \$453,088, or 18.1 per cent., in net earnings.

Baltimore & Ohio.—This company has applied to the Board of Port Wardens of Philadelphia to approve the plans of the proposed drawbridge across the Schuylkill River. This bridge crosses at a diagonal from southwest to northeast, about 1800 ft. below Gray's Ferry bridge. The centre span contains the draw, located in mid-channel, with a double passage 76 ft. clear on each side of the pier, on which the pivot draw is placed. The location of the new bridge is about 1,000 ft. further down than the site proposed for the Schuylkill River East Side Railroad bridge asked for last year. A double track railway is to cross it, which upon leaving the eastern bank will pass through a tunnel under Wharton street, Gray's Ferry road, and the tracks of the Philadelphia, Wilmington & Baltimore Railroad adjoining the latter street. The application to the City Council for leave to build the road through the city calls out a great deal of discussion, as was to be expected. No action has been taken on it as yet.

Buffalo, New York & Philadelphia.—This company defaulted on the coupons due June 1 on the second-mortgage bonds, which are chiefly owned in Buffalo. The Receiver states, however, that he will make arrangements to pay these coupons as soon as possible.

Canadian Pacific.—The earnings and expenses of this road for April and the four months ending April 30, were:

	April.	Four Months.
	1885.	1884.
Earnings.....	\$692,141	\$343,967
Expenses.....	367,776	318,940
Net or deficit....	\$324,365	\$25,027
Per cent. of exps.	53.1	93.7

For the four months the gross earnings increased \$883,739, or 78.7 per cent., while the expenses decreased \$38,274, or 2.6 per cent.; a net change of \$922,013, converting a deficit into a considerable net amount. The mileage worked this year was 2,794, against 2,008 miles in 1884. The freight on construction materials is included in earnings.

Cairo, Vincennes & Chicago.—The Receivers of this line (late the Cairo Division of the Wabash) have made an arrangement for the use of the Chicago & Eastern tracks in Danville, Ill. They have also made an agreement with that company for an interchange of traffic, the running of through trains between Chicago & Cairo, and a close alliance both for freight and passenger traffic.

Cattle King.—A company with this curious name has filed articles of incorporation in Kansas, to build a railroad from Dodge City, on the Atchison, Topeka & Santa Fe, westward to Englewood, a distance of about 75 miles.

Charleston & Savannah.—At a meeting held in Charleston, S. C., June 3, the stockholders voted to authorize the issue of \$1,500,000 new bonds, to be used to pay off the present bonds and the floating debt, improve the road and buy new equipment.

Central, of New Jersey.—At a meeting of the board in New York, May 29, a proposition from the Baltimore & Ohio Co. was presented and discussed; but no action was taken, although the board was generally favorable to it. The details of the proposition have not been made public, but it is understood that the Baltimore & Ohio does not propose to lease the Central, but desires to secure the use of its terminal facilities, and offers to make a traffic agreement. The arrangement, it is stated, will be favorable to the Central, securing it a fair compensation for all Baltimore & Ohio business sent over the road, while at the same time it will give the Baltimore & Ohio the full use of the line and of all its terminal property.

Chesapeake & Delaware Canal Co.—The dispute among the stockholders of this company, which has extended over several years, has been adjusted by a compromise, and at the annual meeting this week a board made up of both parties was chosen. The question at issue was whether the company should operate its own steamers on the canal, or whether transportation should be controlled by the outside line which has managed it for a number of years past.

At the annual meeting it was stated that the revenue of the canal last year was \$208,855. The expenses were \$186,337, leaving a balance of \$22,517. The canal is in better condition than for a long time past.

Chicago, St. Paul, Minneapolis & Omaha.—A suit has been begun by this company in the United States Circuit Court in Milwaukee, against Henry H. Porter and others, to recover certain stock which it is claimed was issued by Porter without consideration when he was president of the company. The stock in question was preferred stock of Chicago, St. Paul & Minneapolis Co., and was issued a few days before the consolidation by which the present company was formed, and has since been converted into stock of the consolidated company.

Cincinnati, Wabash & Michigan.—This company is building a branch from Leesburg, Ind., to Syracuse Lake, where it is expected that a summer resort will be built. The branch will be 3 miles long.

Cincinnati, Hamilton & Dayton.—The suit of Hafre against this company, the Erie and others came up again in Cincinnati, June 2, on a petition of Mr. H. J. Jewett to remove the case to the United States Circuit Court. The Court took the petition, but refused to modify the injunction restraining both Mr. Jewett and the Erie from voting on the pooled stock.

Coalport & Cresson.—A considerable force is now at work on the grading of this road near Ashland Furnace. The road is intended to run from Cresson, Pa., down Clearfield Creek to Coalport, on the Bell's Gap road. It will be 28 miles long.

Denver & New Orleans.—A new company by this name has been organized, for the purpose of taking the road now in existence and building the proposed extension from Pueblo, Col., to a connection with the Fort Worth & Denver road in Texas. The incorporators of the new company are, with very few exceptions, managers of the present company.

Denver & Rio Grande.—The strike of the shopmen on this road still continues. The strikers recently presented a petition to the Judge of the United States Circuit Court representing that the wages of the apprentices have not been advanced; that men were required to do extra work without extra pay; that men had been discharged on false pretenses, and that foremen were employed who were tyrannical and abusive.

They ask that the Court direct the Receiver to remedy the abuses complained of. The Court, after considering the petition, stated that the complaints as to the foremen and the discharge of men were not substantiated by the evidence; that it did not appear that there had been any refusal to pay reasonable wages, and that the Receiver was necessarily allowed a certain discretion in the employment and discharge of men. The Court recommended that the Receiver should not discharge any men on account of their engaging in the strike, and also recommended that the strikers return peaceably to work. This advice was not taken, however. Several attempts have been made to wreck trains, which are charged to some of the strikers.

Detroit & St. Clair.—This company has been organized to build a railroad from Detroit, Mich., by Marine City to St. Clair. The project has been talked of for some time.

Dublin & Wrightsville.—Grading has now made considerable progress on this road, which is to run from Wrightsville, Ga., southwest to Dublin, a distance of 18 miles. Wrightsville is the terminus of a branch road recently completed from that town to Tennille on the Central road.

East Tennessee, Virginia & Georgia.—This company's statement for April and the ten months of the fiscal year from July 1 to April 30 is as follows:

	April.	1885.	1884.	1884-85.	1883-84.
Earnings.....	\$276,603	\$291,519	\$3,309,661	\$3,569,993	
Expenses.....	232,872	193,347	2,061,117	2,058,795	
Net earnings.....	\$43,821	\$98,172	\$1,268,544	\$1,511,198	
Per cent. of exps..	84.1	66.2	61.4	57.7	

For the 10 months the decrease in gross earnings was \$240,332, or 6.7 per cent.; the increase in expenses was \$2,322 or 0.1 per cent.; and the resulting decrease in net earnings was \$242,654, or 16.1 per cent.

Fremont, Elkhorn & Missouri Valley.—Track-laying on the extension of this road is progressing very rapidly, and at latest accounts the rails were down to a point 70 miles westward from the old terminus at Valentine, Neb., and the contractors expect to reach the end of the grade during the present month.

Goldsboro, Snow Hill & Greenville.—A considerable amount has been subscribed to the stock of this company, which proposes building a railroad from Goldsboro, N. C., on the Wilmington & Weldon road eastward through Snow Hill to Greenville, on the Tar River, a distance of about 45 miles. The line passes through some of the best farming country in eastern North Carolina.

Greenville & Laurens.—For some time past negotiations have been in progress for the transfer of this unfinished road to the Central Railroad Co., of Georgia. The negotiations have been delayed on account of the receipt of an offer from the Clyde syndicate for the purchase of the road. After much discussion, however, the directors have instructed the President to complete the transfer to the Central Railroad Co. The road is all graded from Greenville, S. C., to Laurens, and the Central Co. agrees to complete it, receiving in payment \$175,000, a controlling interest in the stock of the company, and also taking the bonds and cash on hand, amounting to about \$45,000 additional.

Illinois Central.—A Chicago dispatch says that this company has ordered an extension of its Yazoo City Branch from Yazoo City, Miss., northward to the Yallahusha River, a distance of 70 miles. The estimated cost is \$15,000 a mile. This is a part of the proposed extension of the branch to Memphis.

Interstate Railroad Co.—This company has filed articles of incorporation in Kansas to build a railroad from St. Louis through Missouri and Kansas to Gainesville, Tex., with branches to almost every town of importance in the states through which it is intended to pass. It is not likely that the road will ever exist elsewhere than on paper.

Joliet, Aurora & Northern.—This company was organized some time ago to build a railroad from Valparaiso, Ind., through Joliet and Aurora, Ill., to Freeport. Arrangements are now being made to build the section of 20 miles from Aurora to Joliet.

Kentucky Central.—The freight brakemen on this road quit work June 1, demanding the withdrawal of a notice issued by the company of a reduction of 10 per cent. in wages, and also demanding their pay, which they have not received for two months. The company refused to accede, and for the present all freight traffic over the road is stopped. There has been no attempt to interfere with the running of passenger trains.

Lake Erie & Western.—In the United States Circuit Court in Indianapolis, June 1, Mr. Thomas C. Platt, for himself and other bondholders, filed a suit for the foreclosure of the first mortgage on the section of this road formerly known as the Lafayette, Bloomington & Muncie. It will be remembered that a receiver was recently appointed for the road on the petition of floating debt creditors. The Court allowed the filing of the bill, and directed the Receiver to keep hereafter separate accounts of the operations of that portion of the road covered by the mortgage which the bondholders now seek to foreclose.

Louisville & Nashville.—This company's earnings and expenses for April and the ten months of the fiscal year from July 1 to April 30 were:

	April.	1885.	1884.	1884-85.	1883-84.
Earnings.....	\$1,158,608	\$1,125,291	\$11,800,491	\$12,162,642	
Expenses.....	714,670	766,996	6,745,609	7,504,679	
Net Earnings.....	\$444,028	\$358,295	\$5,054,882	\$4,658,063	
Per cent. of exp.	61.7	68.2	57.2	61.8	

For the ten months the gross earnings decreased \$362,151, or 2.9 per cent. The expenses were, however, reduced \$758,470, or 9.9 per cent., so that there was a gain of \$396,819, or 8.3 per cent., in net earnings.

Manhattan.—This company's statement for the quarter ending March 31 is as follows:

	1885.	1884.	Inc or Dec.	P. c.
Earnings.....	\$1,672,833	\$1,641,647	I.	1.9
Expenses.....	904,834	959,864	D.	5.7
Net earnings.....	\$767,999	\$681,783	I.	12.6
Other income.....	116,754	29,199	I.	96.55
Total.....	\$884,753	\$710,982	I.	24.1
Interest, rentals, etc.	411,292	369,547	I.	71.45
Surplus.....	\$473,461	\$341,435	I.	33.4

This surplus for the quarter was equal to 1.7 per cent. on the stock. No explanation is given of the large increase in miscellaneous receipts.

Mexican Central.—A thorough examination of the two proposed routes between the main line of the Mexican Central and the city of Guadalajara has very recently been made. One route leaves Irapuato at kilometre 152 (from city of Mexico), and the other route takes its departure from San Francisco del Rincon at kilometre 482, both routes uniting at

Ocotlan, an important town situated near the mouth of the Santiago river, which empties into Lake Chapala. The route from Irapuato, the Mexican *Financier* says, is undoubtedly the better of the two in almost every respect, the grades being easier, and the country which is to furnish the business of the branch road being more fertile and containing a denser population. From Irapuato to Guadalajara the line traverses the Lerma Valley to a point near the hacienda of San Antonio, and thence passes on to Guadalajara through a country favorable for railway building. The Lerma Valley is one of the most populous and prosperous regions in all Mexico. The towns are thriving, and the many haciendas and ranches testify to the agricultural wealth of the valley, which also abounds in live stock. The Irapuato line could, it is estimated, be built with permanent bridges, buildings, water stations and equipment for \$20,000 (American money) per mile. Without doubt, the Central Pacific Branch is the best location it possesses, and competent judges estimate that, from the start, it will pay, on local business alone, a 6 per cent. dividend, to say nothing of its value as a feeder to the main line.

Minneapolis & St. Louis.—The difficulties between this company and the St. Paul, Minneapolis & Manitoba, in relation to the use of track between St. Paul and Minneapolis, is not settled, and this company threatens, in case the Manitoba Co. does not come to terms, to extend its road northward into the territories now served by that line.

Mitchell, Orleans, Paoli, West Baden & French Lick.—This company has been organized in Indiana to build a railroad almost as long as its name. It is to extend from Mitchell, on the Ohio & Mississippi road, to French Lick Springs, a distance of 23 miles.

Mount Carbon.—This company has begun the construction of a railroad 5 miles long, from the mines of the Mount Carbon Coal Co., on Armstrong Creek, W. Va., to a connection with the Chesapeake & Ohio road. It is intended to serve the mines entirely.

Nashville & Knoxville.—This company proposes to build a railroad from Bledsoe's Stand, on the Cincinnati Southern, westward to Carthage, where connection will be made with an extension of the Lebanon Branch of the Nashville, Chattanooga & St. Louis road. The distance is about 80 miles.

Newton, Walnut Valley & Denver.—This company has been organized to build a railroad from Newton, Kan., westward to the Colorado line, with a branch running southward into Indian Territory.

New York, Chicago & St. Louis.—The statement for the quarter ending March 31 is as follows:

	1885.	1884.	Increase.	P. c.
Earnings.....	\$796,935	\$779,293	\$17,642	2.3
Expenses.....	564,558	557,043	7,515	1.3
Net earnings.....	\$232,377	\$222,253	\$10,124	4.6
Interest, rent, etc.	421,627	358,527	63,100	17.6
Deficit.....	\$189,250	\$136,274	\$52,976	38.9

Default was made June 1 on the coupons then due on the \$15,000,000 first-mortgage bonds. This default was not unexpected.

New York & New England.—The Receiver's statements give the following figures for April and the seven months of the fiscal year from Oct. 1 to April 30:

	April.	1885.	1884.	1884-85.	1883-84.
Earnings.....	\$292,102	\$275,507	\$1,783,014	\$1,922,020	
Expenses.....	189,805	214,124	1,263,564	1,719,019	
Net earnings.....	\$72,237	\$61,383	\$519,450	\$203,001	
Per cent. of expenses..	72.4	77.7	70.9	89.4	

For the seven months the decrease in gross earnings was \$139,006, or 7.2 per cent., while the decrease in expenses was \$455,455, or 26.5 per cent., the result being a gain of \$316,449, or 155.9 per cent., in net earnings. In April of this year the expenses were increased by payments for improvements of road.

New York, West Shore & Buffalo.—The Hewitt Committee has prepared still another plan of reorganization to be submitted to the bondholders. Its leading provisions are the issue of \$15,000,000 new 4 per cent. first-mortgage bonds to complete the road, pay debts prior to the present mortgage, and provide working capital. This mortgage may be increased to \$20,000,000, if it is decided to purchase the Weehawken terminal property, and to \$25,000,000 if the consent of three-fourths of the present bondholders is obtained to such increase. A second mortgage is to be made to cover an issue of \$50,000,000 new 5 per cent. bonds to take up the present first-mortgage bonds at par; these bonds to have voting power and to be convertible into preferred stock. Preferred stock is also to be issued to the amount of \$5,000,000 for the unpaid coupons of the present first-mortgage bonds. Income certificates having no voting power to be issued to the amount of \$15,000,000 for the claims of the North River Construction Co. and the New York, Ontario & Western Co. Common stock to the amount of \$20,000,000 to be issued and exchanged for existing common stock in the proportion of one share of new for two shares of old stock, and to be subject to an assessment of \$5 per share, for which assessment first-mortgage bonds will be given. It does not appear probable that this plan will be any more acceptable than those which have preceded it.

It is understood that a number of large holders of first-mortgage bonds have proposed that the matter be settled by the bondholders taking possession of the road and assuming all the debts and claims which the courts may decide to be prior to their own lien. This apparently reasonable proposition is bitterly opposed by the parties at present controlling the company and by the reorganization committee which acts in their interest.

Northern Pacific.—The Cascade Division is now complete from Pasco Junction, Wash. Ter., to North Yakima, a distance of 60 miles on the eastern end. On the western end the track is laid from Tacoma to South Prairie, 25 miles, and 25 miles more east of South Prairie is ready for the rails. The length of the division is 252 miles, of which 85 miles are thus completed, and 25 miles more graded, leaving 142 miles yet to be built.

This company's statement for April and the ten months of the fiscal year from July 1 to April 30 is as follows:

	April.	1885.	1884.	1884-85.	1883-84.
Earnings.....	\$877,605	\$1,441,515	\$9,320,542	\$10,172,648	
Expenses.....	478,082	528,108	5,043,235	5,662,719	
Net earnings.....	\$399,523	\$913,407	\$4,277,307	\$4,509,929	
Per cent. of exps..	54.4	41.5	54.1	55.6	

The loss in both gross and net in April was extraordinary. For the ten months the gross earnings decreased \$852,106, or 8.4 per cent., and the expenses \$619,484, or 10.9 per cent., leaving a decrease of \$232,622, or 5.2 per cent., in net earnings.

Ohio Central.—The United States Circuit Court at Columbus, O., has granted a decree of foreclosure and sale

for that portion of the River Division which is in Ohio. The decree of sale for the road in West Virginia has already been granted.

Oregon Railway & Navigation Co.—It is said that the committees on the lease of this company's property have agreed that all fixed charges shall be paid, and that Navigation stock shall receive 5 per cent. dividends for three years, and 6 per cent. thereafter; that possession shall be taken July 1, if practicable; that the Northern and the Union Pacific shall receive all assets, including lands, the Villard mansion, etc., interest in the hotel at Portland, Or., and all other assets; that \$1,000,000 of the consolidated 5 per cent. Navigation bonds to be issued shall be set aside to pay specified indebtedness (the floating debt, amounting to about \$750,000), any surplus to be returned, and other claims against the company, if any, to be paid by the lessee out of rental. This lease is subject to the approval of the directors of the several companies.

Philadelphia & Reading.—A meeting of the Whelan and Bartol committees of bondholders of this company was held in Philadelphia, May 28, when the following trustees were chosen to carry out the provision of the plan of reorganization as provided in that plan: H. F. West, Samuel R. Shipley, John B. Garrett and H. W. Bartol. Three other trustees are to be appointed by the board of managers of the company and one by the foreign creditors.

Reading & Pottsville.—It appears that an attempt is to be made to still further delay the construction of this road by legal proceedings. The present suit is an application for an injunction to restrain the company from building its line across certain streets in the village of Shoemakersville. A hearing is to be had on the injunction.

Rio Grande & Eagle Pass.—This company has filed articles of incorporation in Texas, to build a railroad from Laredo to the town of Santo, in Webb County, a distance of about 30 miles.

Rochester & Pittsburgh.—The Referee in the foreclosure suit has filed an amended report in accordance with the directions of the Court. The chief change in the report is that the bondholders who were directors of the company at the time of the issue of the second mortgage bonds are credited with those bonds at 75 per cent. of their par value only, that being the price at which they were issued. The report is still to be accepted by the Court.

St. Louis & Chicago.—This company has been organized to build a railroad from Litchfield, Ill., north to Springfield, a distance of about 45 miles.

St. Louis & Emporia.—Track is now reported down from Pleasanton, Kan., westward to the Anderson County line, a distance of 23 miles. The grading is well advanced to Colony, 21 miles further.

Scioto Valley.—The proposed plan for the funding of the debt of this company in consolidated bonds at a reduced rate of interest having failed, owing to the general refusal of the first mortgage bondholders to surrender their prior lien, a suit was begun in Franklin County, O., by C. P. Huntington, to recover \$639,306 advanced by him to the company. A judgment was obtained, the company making no defense, and an execution against the road was issued. Subsequently an application was made to the Franklin County Court for the appointment of a receiver, and the Court granted the order. It is expected that the bondholders will shortly begin proceedings on their own account.

South Pennsylvania.—A first mortgage to the Union Trust Co., of New York, as trustee, to secure an issue of \$20,000,000 in bonds has been executed by this company and filed for record in the several counties of Pennsylvania through which the road passes.

Springville & Sardinia.—Proceedings in foreclosure have been begun against this road, which extends from Springville, N. Y., to Sardinia Junction, 11½ miles, and has a bonded debt of \$25,000 only. It was formerly a profitable local line, connecting with the Buffalo, New York & Philadelphia, but the building of the Rochester & Pittsburgh road through Springville took away nearly all its business.

Texas & St. Louis.—The answer and bill recently filed in the foreclosure suit of the stockholders of this company came up before the United States Circuit Court in St. Louis last week, and after hearing arguments, the Court took the appeal and reserved its decision.

Troy & Greenfield.—The bill providing for the sale of this road, which had previously passed the Lower House of the Massachusetts Legislature, has now passed the Senate, an attempt to substitute another bill having failed. The bill provides that a corporation may be formed to operate a continuous line of road from Boston to the western boundary line of the state, and the Governor and Council are authorized to sell such corporation the Troy & Greenfield road, including the Hoosac Tunnel, payment to be made in stock and bonds of the new company. It is provided, however, that before this sale can be made the company must prove to the satisfaction of the Governor that it controls a continuous line of railroad, in actual operation, from a connection with the Troy & Greenfield road to Boston. The bill also provides that the connecting roads shall be entitled to have their traffic transported through the tunnel on equitable terms.

West Jersey.—This company's statement for April and the four months ending April 30 is as follows:

	April.	1885.	1884.	Four months.	1884.
Earnings.....	\$94,207	\$93,185	\$303,676	\$312,164	
Expenses.....	50,234	57,248	203,618	193,875	
Net earnings.....	\$37,973	\$35,937	\$100,058	\$118,289	
Interest, rentals, etc.			72,226	75,441	
Surplus income.....			\$27,832	\$42,848	

For the four months this shows a decrease in gross of \$8,488, or 2.7 per cent.; an increase in expenses of \$9,473, or 5.0 per cent.; and a resulting decrease in net earnings of \$18,231, or 15.5 per cent. The charges decreased \$3,215, or 4.3 per cent., leaving a decrease of \$15,016, or 34.9 per cent., in surplus.

Wilmington, Columbia & Augusta.—This road has been leased to the Wilmington & Weldon Railroad Co. for 99 years, from June 1, and the lessee took possession of the road on that date. It is understood that under the terms of the lease the rental paid will be interest on the bonds and 6 per cent. on the stock. The road extends from Wilmington, N. C., to Columbia, S. C., 189 miles. It is owned by the same parties who control the Wilmington & Weldon, and has been managed by the same officers for several years, so that the change by the lease will be merely nominal. Both roads form part of the Atlantic Coast line.

Wilmington & Weldon.—As noted elsewhere, this company leases the Wilmington, Columbia & Augusta road from June 1. The rental, it is stated, will be interest on the bonds and 6 per cent. on the stock. By the last report this would amount to \$154,140 yearly, while the net earnings of the leased road last year amounted to \$197,486. The total mileage now worked by this company is 887 miles.